

DRAFT

February 2, 1996

Tom Walker, P.E.
Mobil Exploration & Producing U.S. Inc.
10735 South Shoemaker Avenue
Santa Fe Springs, CA 90670

**RE: DRAFT ADDITIONAL SOIL SAMPLING AT MOBIL JALK FEE PROPERTY, 10607
NORWALK BLVD., SANTA FE SPRINGS, CALIFORNIA (03.061414.001.001)**

Dear Mr. Walker:


Enclosed for your review, please find a draft copy of the report entitled *Additional Soil Sampling at Mobil Jalk Fee Property, 10607 Norwalk Blvd., Santa Fe Springs, California*. This report is currently being reviewed by Hassan Amini, principal in charge of this project.

Please review and forward any comments to Tabb Bubier at (714) 752-3204 or Everett Ferguson at (714) 752-3213.

Sincerely,

John W. Butler

Tabb W. Bubier
Supervising Geoscientist


Everett Ferguson Jr.

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Prepared by:

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February 2, 1996

**ADDITIONAL SOIL SAMPLING AT
MOBIL JALK FEE PROPERTY
10607 NORWALK BOULEVARD
SANTA FE SPRINGS, CALIFORNIA
(03.0601414.001.001)**

Draft

Additional Soil Sampling

McLaren/Hart Project No. 03.0601414.001.001

Mobil Jalk Fee Property 10607 Norwalk Boulevard Santa Fe Springs, California

February 2, 1996

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1.0 INTRODUCTION

McLaren/Hart Environmental Engineering (McLaren/Hart) performed additional soil sampling activities at the Mobil Exploration and Producing U.S.-(Mobil) Jalk Fee Property located at 10607 Norwalk Boulevard, Santa Fe Springs, California (Figure 1). The work was performed between December 18 and 29, 1995, in accordance with the workplans entitled *Proposal to Conduct Additional Sampling for Mobil Jalk Fee Property, 10607 Norwalk Blvd., Santa Fe Springs, California (IR95-0688)* dated December 12, 1995 and *Change Order for Mobil Jalk Fee Property, 10607 Norwalk Blvd., Santa Fe Springs, California* dated December 19, 1995.

The investigation consisted of advancing 17 Geoprobe, 20 hand augers, and 2 soil borings (drilled by hollow stem auger) to obtain and analyze soil samples and advancing 9 soil probes to analyze soil gas concentrations. The general objective of the additional soil sampling activities was to characterize the presence and/or distribution of volatile organic compounds (VOCs), total petroleum hydrocarbons (TPH), aromatic volatile organic compounds (BTEX), and/or halogenated volatile organic compounds (HVOCs).

1.1 INVESTIGATION OBJECTIVES

The additional sampling activities were divided into three tasks. These tasks and the associated objectives are presented below.

Task 1 - Oil Production Well and Tank Battery

- Determine the presence of TPH along the north, south, and east perimeters of the tank battery.

Task 2 - Bioremediation Cell Closure Sampling

- ▶ Verify that remediation activities did not impact the native soil beneath the former bioremediation cells.

Task 3 - Northwest Perimeter, Northeast Perimeter, Area Adjacent to Continental Heat Treating, Inc.(Tetrachloroethene Impacted Area), and Area of Former Trucking Company

- ▶ Assess the presence of VOCs and TPH near borings SS-1, -3, -4, and -7 and adjacent to the equipment repair/storage yards.
- ▶ Further define/verify the lateral and vertical extent of the tetrachloroethene (PCE) plume. (Area adjacent to Continental Heat Treating, Inc.)
- ▶ Determine if former trucking operation activities impacted the subsurface in the central portion of the site. (Area of Former Trucking Company)

The Mobil Jalk Fee Property site layout, with the areas of Tasks 1, 2, and 3 identified, is presented in Figure 2.

1.2 SITE HISTORY AND DESCRIPTION

During the early 1900's, oil was discovered near the subject site, and shortly after, the area became an active oil field. The subject site consists of 8.8 acres of undeveloped land located in the southwest portion of the oil field. In the past 20 years, some industrial and commercial development has occurred on the periphery of the oil field and has entirely surrounded the subject site. Currently, the site contains four active oil wells and a small tank battery.

1.3 PREVIOUS WORK

Prior to McLaren/Hart, Levine-Fricke generated the following reports on the Jalk Fee property:

- *Draft Subsurface Soil Investigation Jalk Fee Property, 10607 Norwalk Boulevard, Santa Fe Springs, California* dated December 6, 1991
- *Draft Remedial Action Plan Jalk Fee Property, 10607 Norwalk Boulevard, Santa Fe Springs, California* dated December 18, 1991

According to Levine-Fricke (1991a), the Jalk Fee property has been used for oil production from the 1920s to the present. The current tenant, Hathaway Company, has conducted oil production activities at the site from the early 1980s to the present (Levine-Fricke, 1991b).

Most of the Jalk Fee property is undeveloped land with four active oil wells and a small tank battery. The tank battery is in the northwest corner of the site and contains six above ground tanks. Three of the active oil wells are near the northern property boundary and one well is near the southern boundary. According to Levine-Fricke (1991b), five oil wells have been abandoned on the property and approximately eight former sumps (i.e., mud pits) associated with oil drilling and production have been observed in historic aerial photographs.

According to Levine-Fricke (1991b), a small oil refuse area where metal objects were deposited (referred to as the boneyard area) was located in the southwest portion of the property from approximately 1920 until 1942. An aboveground storage tank farm was formerly located in the southeast portion of the property in the late 1920s and early 1930s (Levine-Fricke, 1991b).

According to Levine-Fricke (1991b), Woodward-Clyde Consultants (WCC) completed a subsurface investigation at the Jalk Fee property in August, 1988. The investigation included a geophysical survey, surface soil sampling, and a soil boring and sampling program. The study was cancelled by a party other than Mobil prior to completion and only a "partial report" was prepared by WCC. The results were summarized in WCC's report dated September 14, 1988 entitled "Preliminary Investigation Report". WCC reportedly detected what were believed to be solvent odors and vapor discharge from borings in the eastern section of the property.

According to Levine-Fricke (1991a), during discussions with Mobil it was reported "that the eastern portion of the site was leased at one time to a company that used solvents along that

portion of the site." Recent investigations by Mr. Tom Walker, of Mobil, has revealed that the aforementioned leased property was located in the northeast portion of the property. The southern boundary of the leased property was approximately 70 feet north of the Tetrachloroethene (PCE) Impacted Area (which is adjacent to the southern boundary of the Jalk Fee property). Additionally, per Mr. Walker, the source of Levine-Fricke's information regarding the eastern portion of the site was not from a Mobil representative but rather originated from the current operator (Mr. "Doc" Hathaway) of the Jalk Fee oil wells.

Levine-Fricke (1991b) conducted subsurface investigations at the Jalk Fee property between November 1990 and September 1991. The field investigations included a shallow methane gas survey, the excavation of shallow trenches in the former boneyard and eight former sump areas, and 27 shallow soil borings to depths ranging from 20 to 55 feet below grade. The selection of the trench and soil boring locations were based on information presented in the partial report prepared by WCC, discussions with Mobil personnel familiar with the site, and review of historical aerial photographs. The results from the investigation were presented in Levine-Fricke's (1991a) December 6, 1991, report and briefly summarized in Levine-Fricke's (1991b) December 18, 1991 report.

The results from Levine-Fricke's (1991a) subsurface investigation indicated that only 10 of the 21 areas investigated had chemicals in soil. The southeast portion of the Jalk Fee property contained up to 2,500 ppm tetrachloroethylene (PCE) and other chlorinated compounds. Petroleum hydrocarbons (C5-C30) up to 29,000 ppm were also detected, using EPA Method 8015 Modified, in soil at this location. Based on the analytical results from soil samples collected from soil boring SB-3, Levine-Fricke (1991a) estimated that PCE-affected soil extends vertically from ground surface to approximately 20 feet below ground surface at this location (Levine-Fricke, 1991a). PCE was also detected in one surface sample obtained along the northern property boundary in the western portion of the site (near SB-17) at a concentration of 0.037 ppm.

Additionally, in a further attempt to identify possible sources of PCE and related compounds at the Jalk Fee site, McLaren/Hart reviewed the files of the southern neighboring property (Continental Heat Treating, Inc.) at the Environmental Compliance Section of the City of Santa Fe Springs. The results of this work are detailed in McLaren/Hart's September 23, 1993 letter entitled "Perchloroethylene (PCE) and Heavy Metals in Soil at the Jalk Lease". In

summary, the file contained information indicating that the neighboring facility used PCE. An average volume of 125 gallons and a maximum volume of 250 gallons of PCE were stored per day at the Continental Heat Treating, Inc. facility (February 15, 1993 Hazardous Material Registration Forms).

McLaren/Hart performed a subsurface investigation in the PCE Impacted Area. Results of this investigation are presented in a McLaren/Hart report entitled, "Limited Subsurface Investigation of Tetrachloroethylene (PCE) Impacted Soil at Mobil Jalk Fee Property, Santa Fe Springs, California", dated November 15, 1994. The results of the investigation indicated the following:

- ▶ Since the impacted soil containing the highest halogenated volatile organic compound (HVOC) concentrations are confined to depths shallower than 20 feet, the source of the contamination probably resulted from surface spillage.
- ▶ Since normal crude oil production does not involve the use of PCE, it appears that the PCE originated from a non-oil production source.
- ▶ Vertical extent of the impacted soil below 30 foot depth has not been defined; PCE was detected in GP-15 at 48 feet (0.31 ppm) and appears to have impacted groundwater in nearby monitoring well MMW-5 at 2,100 ppb (May 31, 1995).
- ▶ The source of PCE in the soil along the southern property boundary does not appear to be related to the operations conducted by Mobil on the property. It is probable that the source of PCE is from an off-site source.
- ▶ Oil production activities on site has impacted the soils with TRPH compounds near the concrete pad.
- ▶ Vertical and lateral extent of the TPH impacted soil has been defined as two small surface areas and one small subsurface area at 15 feet below ground surface.

1.4 HYDROGEOLOGIC SETTING

The Santa Fe Springs Oil Field is located on the Santa Fe Springs plain, which is part of the Montebello Forebay non-pressure area of the Central Basin. Groundwater is found throughout the region under unconfined conditions in the Recent Alluvium and in the underlying Exposition Aquifer. Numerous other aquifers are also present in the area, and are under confined to semi-confined conditions: the Gage, Hollydale, Jefferson, Lynwood, Silverado, and Sunnyside Aquifers. Within the Santa Fe Springs Oil Field, the upper 100 feet of sediments consist predominantly of permeable sands, although the upper 15 feet of sediments have a higher silt and clay content and lower permeability. According to geologic cross-sections presented in California Department of Water Resources (CDWR) Bulletin 104 (1988), the first regional groundwater-bearing zone is the Exposition Aquifer, which is first encountered at approximately 60 feet below grade. The second regional aquifer is the Gage Aquifer, first encountered at approximately 110 feet below ground surface, according to geologic cross-sections presented in CDWR (1988).

The depth to first groundwater in the area of the oil field has generally been reported at approximately 60 feet below grade, although localized perched zones have been encountered as shallow as 13 feet below grade. Information from the Los Angeles County Department of Public Works (LACDPW)-Hydrologic Records section indicates that the depth to water at well number 1625-N (located at the intersection of Telegraph Road and the Southern Pacific Railroad tracks approximately two-thirds of a mile northwest of the Jalk Fee property) was 58 feet below grade on April 30, 1992. The occurrences of groundwater at approximately 60 feet below grade correspond to the top of the saturated portion of the Exposition Aquifer. The regional, horizontal groundwater flow direction in both the Exposition and Gage Aquifers in the Santa Fe Springs Oil Field ranges from the south to southwest.

Although most of the aquifers in the area are separated by aquicludes, the Hollydale and Gage are hydraulically connected approximately 2,000 feet north of the intersection of Telegraph Road and Norwalk Boulevard. Approximately 7,200 feet north of the intersection of Telegraph Road and Norwalk Boulevard, the Hollydale, Jefferson, and Lynwood are also hydraulically connected. There are domestic and commercial water wells screened in the Lynwood and Silverado (250 to 780 feet below grade) throughout the city.

Significant hydrologic features in the area include the San Gabriel River, which flows approximately north-south along the western edge of the city. There are also two extensive water spreading grounds/percolation basins approximately 1 to 2.5 miles northwest of the city limits. These features will act as groundwater recharge, or "mounding" areas, thus inducing groundwater to flow away from them.

Soil at the site consists of interbedded sand, silty sand, sandy silt, silt, and clayey silt in the upper 40 feet. Sandy soils are loose to dense and silty soils are slightly stiff to hard. A very tight, dry, silt is located approximately 15 below grade and two very tight, dry, clayey silt layers are located at 23 and 29 feet below grade. These layers exist throughout most of the investigated area. Perched groundwater was found at 5 to 10 feet below grade in small quantities near the concrete pad.

2.0 FIELD INVESTIGATION

2.1 PRE-FIELD INVESTIGATION

Prior to starting the field activities, an existing health and safety plan was modified to include the work that was to be performed at the site. All soil boring locations were identified and a utility clearance was performed by a McLaren/Hart Engineer. Underground Service Alert was notified 48 hours prior to starting work as required by State law. Additional pre-field activities included the scheduling and contracting of subcontractors, preparing field equipment, and marking the soil boring locations.

All soil samples were collected in accordance with McLaren/Hart's standard protocols for sampling soil using a hand auger, Geoprobe, and hollow-stem auger drill rig (Appendix A). All samples collected were sent to MBT Environmental Laboratory, a State-certified hazardous waste testing laboratory. All soil cuttings and decontamination water generated during the drilling activities were placed in DOT approved 55-gallon drums and stored on-site pending analytical results.

2.2 FIELD INVESTIGATION

McLaren/Hart's additional soil sampling investigation consisted of advancing a total of 17 Geoprobos, 20 hand augers, 2 soil borings (drilled by hollow stem auger), and 9 soil gas probes. The field investigation was performed between December 18 and 29, 1995. A summary of the proposed scope of work, for the soil sampling activities, is included in Table 1. The following sections describe the approach and methods used to complete this investigation.

2.2.1 Task 1 - Oil Production Well and Tank Battery

McLaren/Hart's proposed scope of work for the Task 1 included advancing one Geoprobe boring (MH-4) in the vicinity of Oil Well #112 and along the eastern perimeter of the Tank Battery. The location of Oil Well #112 is shown on Figure 2. Soil samples were collected from depths of 5 and 10 feet below ground surface (bgs) and analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX) and total petroleum hydrocarbons (TPH) using EPA Methods 8020 and 8015 Modified, respectively. Soil samples were also collected from depths of 20, 30, and 40 feet bgs and analyzed for volatile organic compounds (VOCs) using EPA Method 8240. These analyses were performed to further evaluate the presence of VOCs at depth in the area. Collection and analysis of these soil samples from MH-3 would have been preferable since MH-3 is closer to the VOCs detected by Levine-Fricke in 1991. However, due to subsurface obstructions, refusal was encountered in MH-3 at 2 feet below ground surface (bgs). Soil boring logs, for borings greater than 20 feet bgs, are included in Appendix B.

In addition, three Geoprobe borings (MH-2, -5, and -6) were advanced along the northern and southern perimeters of the Tank Battery. The location of the Tank Battery is shown on Figure 2. In MH-2, soil samples were collected from depths of 5 and 10 feet below ground surface (bgs) and analyzed for TPH and VOCs using EPA Methods 8015 Modified and 8240, respectively. BTEX compounds could have been analyzed using EPA Method 8020; however, EPA Method 8240 was selected since it provided information on both BTEX and solvent compounds (such as those identified by Levine-Fricke in 1991). In MH-5 and -6, soil samples were collected from depths of 5 and 10 feet below ground surface (bgs) and analyzed for BTEX and TPH using EPA Methods 8020 and 8015 Modified, respectively.

2.2.2 Task 2 - Bioremediation Cell Closure Sampling

McLaren/Hart's proposed scope of work for the Task 2 included advancing twenty hand auger borings at the former Bioremediation Cells #1 and #2 (13 soil samples from Cell #1 [see Figure 3] and 7 soil samples from Cell #2 [see Figure 4]). Soil samples were collected from a depth of 0.5 feet below ground surface (bgs) and analyzed for BTEX and TPH using EPA Methods 8020 and 8015 Modified, respectively.

2.2.3 Task 3 - Northwest Perimeter, Northeast Perimeter, PCE Impacted Area, and Former Trucking Operations Area

Northwest and Northeast Perimeters - This work involved advancing three Geoprobe borings (MH-7, -8, and -9), along the Northwest Perimeter of the property; and advancing two Geoprobe borings (MH-10 and -11) along the Northeast Perimeter of the property (see Figure 2). In MH-7, soil samples were collected from a depth of 5 and 10 feet bgs. Soil samples were collected a 1 and 5 feet bgs in borings MH-8 and MH-9. In MH-10 and MH-11, soil samples were collected from a depth of 1, 5, and 10 feet bgs. Soil samples collected along the Northwest and Northeast Perimeters were analyzed for TPH and VOCs using EPA Methods 8015 Modified and 8240, respectively.

PCE Impacted Area - McLaren/Hart advanced six Geoprobe borings (GP-19 through -24) to a depth of 40 feet bgs outside the suspected fringe of the HVOC plume. The location of the PCE Impacted Area is shown on Figure 2. Soil samples were collected at five foot intervals and analyzed for halogenated volatile organic compounds (HVOCs) using EPA Method 8010. McLaren/Hart also advanced two soil borings (MB-1 and MB-2) to 60 feet bgs in the areas with the highest recorded concentrations of PCE. These borings were advanced to assess the vertical extent of the HVOC plume. Soil samples, in these borings, were collected at five foot intervals beginning at 25 feet bgs and analyzed for HVOCs using EPA Method 8010.

Additionally, a continuous "Macro" sample was collected, using the Geoprobe, in the central portion of the PCE Impacted area. The sample was collected in transparent acetate liners and was used to log, in detail, the soil conditions in this area to a depth of 42 feet bgs. The macro sample was capped and archived for future reference. The macro sample showed interbedded sand, silty sand, sandy silt, silt, and clayey silt in the upper 40 feet. Sandy soils varied from loose to dense and silty soils varied from slightly stiff to hard. This type lithologic stratification lends to solvent compounds behaving erratically in the subsurface (i.e. varying directions and extent based on preferential flow paths). Six silt layers were observed in the Macro sample. One silt layer was identified from 15.5 to 16 feet bgs, two clayey silt layers were identified from 23 to 24 and 29 to 30 feet bgs, and three successive silt layers were identified from 30 to 33, 33 to 34.5, and 34.5 to 37 feet bgs. Soil boring logs, for borings greater than 20 feet bgs, are included in Appendix B.

Former Trucking Operations Area - An aerial photograph review of the Jalk Fee Property was performed to locate any historic activities (on-site or immediately off-site) which may be considered potential areas of concern. The results of the aerial photograph review are summarized in a letter report included as Appendix C. One of the primary purposes of the aerial photograph review was verify the location of the Former Trucking Operations on the Jalk Fee Property. The location of the Former Trucking Operations are shown on Figure 2 (the area of Task 3 in the central portion of the property). Based on the information gathered from the aerial photograph review, nine soil gas probe locations were placed in a 3 by 3 grid with 50 foot spacing in the area identified (from the aerial photograph review) as the location of the Former Trucking Operations. McLaren/Hart advanced nine soil gas probes to depths of 5 and 10 feet bgs. Soil gas samples were collected at each interval and analyzed on-site for HVOCs using EPA Method 8010.

3.0 RESULTS

3.1 TASK 1 - OIL PRODUCTION WELL AND TANK BATTERY

Petroleum hydrocarbons in the C22-C32 (Motor Oil) range were detected at a concentration of 13 parts per million (ppm) in MH-2 at 10 feet bgs. No other compounds were detected in this area. Analytical results for the additional soil sampling activities for Task 1 are summarized in Table 2 and Figure 5. Chain-of-Custody forms and laboratory data sheets are included in Appendix D.

3.2 TASK 2 - BIOREMEDIATION CELL CLOSURE SAMPLING

Petroleum hydrocarbons in the C12-C22 (Diesel Fuel) range were detected at a concentration of 23 ppm in soil sample Cell 40 (Cell #1, Figure 3). Petroleum hydrocarbons in the C22-C32 (Motor Oil) range were detected at concentrations ranging from 55 to 700 ppm in soil samples collected from Cell #1 (Figure 3) and ranging from 11 to 4,600 ppm in soil samples collected from Cell #2. No other compounds were detected in this area. Analytical results for the additional soil sampling activities for Task 2 are summarized in Table 3. Chain-of-Custody forms and laboratory data sheets are included in Appendix D.

3.3 TASK 3 - NORTHWEST PERIMETER, NORTHEAST PERIMETER, PCE IMPACTED AREA, AND FORMER TRUCKING OPERATIONS AREA

Petroleum hydrocarbons in the C22-C32 (Motor Oil) range were detected at concentrations ranging from 85 to 1,600 ppm in soil samples collected along the Northwest and Northeast Perimeters. No other compounds were detected in this area. Analytical results for the additional soil sampling activities for Northwest and Northeast Perimeter are summarized in

Table 4 and Figures 5 and 6. Chain-of-Custody forms and laboratory data sheets are included in Appendix D.

Halogenated volatile organic compounds (HVOCs) were detected in the samples collected in the PCE Impacted Area. *cis*-1,2-Dichloroethene (*cis*-1,2-DCE) was detected in several locations at concentrations ranging from 10 to 970 parts per billion (ppb). *trans*-1,2-Dichloroethene (*trans*-1,2-DCE) was detected in GP-23 at 5 feet bgs and GP-24 at 15 feet bgs at concentrations of 12 and 160 ppb, respectively. Trichloroethene (TCE) was detected in several locations at concentrations ranging from 10 to 180 parts per billion (ppb). PCE was detected in several locations at concentrations ranging from 10 to 4,100 parts per billion (ppb). Analytical results for the additional soil sampling activities for the PCE Impacted Area are summarized in Table 5. Figures 7 through 14 illustrate the potential extent of the HVOC plume at the five foot intervals, respectively. Chain-of-Custody forms and laboratory data sheets are included in Appendix D.

Halogenated volatile organic compounds (HVOCs) were detected in the samples collected in the area of the Former Trucking Operations. PCE was detected in SG-4 at 10 feet bgs and SG-8 at 5 feet bgs at concentrations of 3 and 1 ppb, respectively. Analytical results for the additional soil sampling activities for the Former Trucking Operations area are summarized in Table 6 and Figure 15. Chain-of-Custody forms and laboratory data sheets are included in Appendix D.

4.0 CONCLUSIONS AND RECOMMENDATIONS

For the purpose of this evaluation, McLaren/Hart used 1) Regional Water Quality Control Board's "Interim Guidance Cleanup Criteria" Level B-(based on depth to groundwater) for petroleum hydrocarbons and associated VOCs and 2) for components not contained in the guidance document, McLaren/Hart used 10 times the MCL (based on Marshack, 1995) as the screening criteria for soil. Based on similar projects these soil screening criterion have been considered acceptable.

4.1 TASK 1 - OIL PRODUCTION WELL AND TANK BATTERY

No petroleum hydrocarbons were detected above the Region Water Quality Control Board's (RWQCB) "Interim Guidance Cleanup Criteria". Based on the results of this investigation and the review of previous investigations, it is McLaren/Hart's opinion that no further remedial investigation are required around the perimeter of the Tank Battery or Oil Production Well.

4.2 TASK 2 - BIOREMEDIATION CELL CLOSURE SAMPLING

No petroleum hydrocarbons were detected above the RWQCBs "Interim Guidance Cleanup Criteria". No BTEX compounds were detected in this area. Based on the results of this investigation and the review of previous investigations, it is McLaren/Hart's opinion that bioremediation activities did not impact the surface soil beneath the bioremediation cells.

4.3 TASK 3 - NORTHWEST PERIMETER, NORTHEAST PERIMETER, PCE IMPACTED AREA, AND FORMER TRUCKING OPERATIONS AREA

Northwest and Northeast Perimeters - No petroleum hydrocarbons were detected along the Northwest and Northeast Perimeter above the RWQCBs "Interim Guidance Cleanup Criteria".

No VOCs were detected in this area. Based on the results of this investigation and the review of previous investigations, it is McLaren/Hart's opinion that no further remedial investigation are required for along the Northwest Perimeter. Based on the information gather by Levine-Fricke along the Northeast Perimeter, McLaren/Hart collected verification samples to determine the extent of the TPH impacted soil. However, the data collected by Levine-Fricke was not reproducible. Based on the results of this investigation and the review of previous investigations, it is McLaren/Hart's opinion that no further remedial investigation are required for along the Northeast Perimeter.

PCE Impacted Area - The halogenated volatile organic compounds *cis*-1,2-DCE, *trans*-1,2-DCE, TCE, and PCE were detected in the vicinity of the HVOC plume. Hence, the plume appears to be of greater lateral and vertical extent than original estimated. Based on the Macro sample and the distribution of the HVOC plume, a correlation can be made between the finer grained soil material and the lateral distribution the HVOC plume. The plume has the greatest lateral distribution in the finer grained soils (silts) and has smallest distribution in the coarser grained soils (sands). Based on the behavior of PCE (and other dense non-aqueous phase liquids [DNAPLs]) in heterogeneous soils; such as that which exists in this area, no further subsurface investigations in this area are recommended. However, it is McLaren/Hart's opinion that remedial activities be evaluated for the PCE Impacted Area.

Former Trucking Operations Area - The halogenated volatile organic compound PCE vapors were detected at low concentrations in the soil in the vicinity of the Former Trucking Operations area. These results indicated that the subsurface appears not to have been impacted by the former operations in this area. Hence, it is McLaren/Hart's opinion that no further remedial investigation activities are required for this area.

5.0 REFERENCES

California Department of Water Resources. 1988. Planned Utilization of the Groundwater Basins of the Coastal Plain of Los Angeles County, Bulletin 104, Appendix A: Ground Water Geology, 181 pp.

Levine-Fricke. 1991a. Draft Subsurface Soil Investigation, Jalk Fee Property, 10607 Norwalk Boulevard, Santa Fe Springs, California. Unpublished report dated December 6, 1991.

Levine-Fricke. 1991b. Draft Remedial Action Plan, Jalk Fee Property, 10607 Norwalk Boulevard, Santa Fe Springs, California. Unpublished report dated December 18, 1991.

McLaren/Hart. 1994. Limited Subsurface Investigation of Tetrachloroethylene (PCE) Impacted Soil at Mobil Jalk Fee Property, Santa Fe Springs, California. Unpublished report dated November 15, 1994.

Tables

Table 1
Summary of Proposed Additional Soil Sampling

Mobil Jalk Fee Property, Santa Fe Springs, California

Area of Interest	Chemicals of Interest	Justification	Investigation Approach	Number of Sampling Points	Approximate Sample Depths (ft)	Analysis
Task 1 Oil Production Well #112	VOC	The purpose of the additional investigation would be verify the presence of the compounds only. Determination of lateral and vertical extent is not included in this scope of work.	GeoProbe	1	5, 10, 20, 30, 40	8240 ¹ (MH-3 or -4)
Task 1 Tank Battery	TPH	Determine the presence of TPH compounds along the north, south, and east perimeter of the tank battery.	GeoProbe	5	5, 10, 15 - vertical depths (analyze up to two samples per boring)	8015 ² Modified 8020 (MH-4, -5, and -6) 8240 (MH-2 and -3)
Task 2 Collection of Closure Soil Samples	TPH VOC	1) To document remediation activities did not impact the native soil underlying the treatment cell.	Hand Auger	20	1	8015 Modified 8020
Task 3 Northwest Perimeter	VOC	Purpose of these borings are to assess the presence of TPH and VOC near locations SS-1, SS-3, and along fenceline next to the equipment repair yard.	GeoProbe	3	1, 5, 10, 15 (analyze up to two samples per boring)	8015 Modified 8240
Task 3 Northeast Perimeter	VOC TPH	Assess the vertical extent of impacted soil near locations SS-4 and SS-7.	GeoProbe	2	1, 5, 10, 15, 20, 25 (analyze up to three samples per boring)	8015 Modified 8240

1 EPA Method 8240

2 EPA Method 8015 Modified (full carbon chain)

3 EPA Method 8010

Table 1
Summary of Proposed Additional Soil Sampling

Mobil Jalk Fee Property, Santa Fe Springs, California

Area of Interest	Chemicals of Interest	Justification	Investigation Approach	Number of Sampling Points	Approximate Sample Depths (ft)	Analysis
Task 3 PCE Impacted Area next to Continental Heat Treating, Inc.	VOC	To further define verify the lateral and vertical extent of PCE plume onto the site.	GeoProbe Auger	6 2	GeoProbe = 5, 10, 15, 20, 25, 30, 35, 40 Auger = 25, 30, 35, 40, 45, 50, 55, 60	8010 ³
Task 3 Various Areas of Concern for VOCs	VOC	To verify historic site activities (trucking operation) did not impact the soil in the central portion of the eastern half of the site.	Soil Gas Survey GeoProbe (if necessary)	9 up to 3	Soil Gas = 5, 10 GeoProbe = to be determined	8010

1 EPA Method 8240

2 EPA Method 8015 Modified (full carbon chain)

3 EPA Method 8010

Table 2
Soil Sample Analytical Results for Oil Production Well and Tank Battery (Task 1)

Mobil Jalk Fee Property, Santa Fe Springs, California

Soil Boring Identification	Depth (feet)	Date Sampled	EPA Method 8020 (parts per billion, ppb)						EPA Method 8015 Modified (parts per million, ppm)				EPA Method 8240 (ppb)	EPA Method 8010 (ppb)
			Benzene	Toluene	Ethylbenzene	1,2-Xylene	1,3-Xylene	1,4-Xylene	Gasoline Range (C4-C12)	Diesel Range (C12-C22)	Motor Oil Range (C22-C32)	Heavy Hydrocarbon Range (C32-C40)	VOCs	HVOCs
MH-2	5	12/21/95	--	--	--	--	--	--	<10	<10	<10	<10	BRL	--
MH-2	10	12/21/95	--	--	--	--	--	--	<10	<10	13	<10	BRL	--
MH-4	5	12/21/95	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	--	--
MH-4	10	12/21/95	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	--	--
MH-4	20	12/21/95	--	--	--	--	--	--	--	--	--	--	BRL	--
MH-4	30	12/21/95	--	--	--	--	--	--	--	--	--	--	BRL	--
MH-4	40	12/21/95	--	--	--	--	--	--	--	--	--	--	BRL	--
MH-5	5	12/21/95	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	--	--
MH-5	10	12/21/95	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	--	--
MH-6	5	12/21/95	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	--	--
MH-6	10	12/21/95	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	--	--
Screening Criteria			10 ¹	1,500 ¹	7,000 ¹	17,500 ¹	17,500 ¹	17,500 ¹	100	1,000	10,000		Various	NC

-- - Not Analyzed
BRL - Below Reporting Limit

¹ - Cleanup criteria equals the maximum contaminant level (MCL) times 10

Created by: M. Williams
Reviewed by: E. Ferguson

Table 3
Soil Sample Analytical Results for Bioremediation Cell Closure Sampling (Task 2)

Mobil Jalk Fee Property, Santa Fe Springs, California

Soil Boring Identification	Depth (feet)	Date Sampled	EPA Method 8020 (parts per billion, ppb)						EPA Method 8015 Modified (parts per million, ppm)			
			Benzene	Toluene	Ethylbenzene	1,2-Xylene	1,3-Xylene	1,4-Xylene	Gasoline Range (C4-C12)	Diesel Range (C12-C22)	Motor Oil Range (C22-C32)	Heavy Hydrocarbon Range (C32-C40)
Cell 71	1	12/19/95	<10	<10	<10	<10	<10	<10	<10	<10	110	<10
Cell 59	1	12/19/95	<10	<10	<10	<10	<10	<10	<2000	<2000	4600	<2000
Cell 76	1	12/19/95	<10	<10	<10	<10	<10	<10	<10	<10	11	<10
Cell 80	1	12/19/95	<10	<10	<10	<10	<10	<10	<50	<50	110	<50
Cell 57	1	12/19/95	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Cell 64	1	12/19/95	<10	<10	<10	<10	<10	<10	<500	<500	1100	<500
Cell 55	1	12/19/95	<10	<10	<10	<10	<10	<10	<500	<500	610	<500
Cell 27	1	12/19/95	<10	<10	<10	<10	<10	<10	<10	<10	65	<10
Cell 46	1	12/19/95	<10	<10	<10	<10	<10	<10	<10	<10	130	<10
Cell 25	1	12/19/95	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Cell 2	1	12/19/95	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Cell 30	1	12/19/95	<10	<10	<10	<10	<10	<10	<200	<200	700	<200
Cell 43	1	12/19/95	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Cell 21	1	12/19/95	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Cell 6	1	12/19/95	<10	<10	<10	<10	<10	<10	<50	<50	520	<50
Cell 12	1	12/19/95	<10	<10	<10	<10	<10	<10	<50	<50	460	<50
Cell 15	1	12/19/95	<10	<10	<10	<10	<10	<10	<10	<10	130	<10
Cell 17	1	12/19/95	<10	<10	<10	<10	<10	<10	<50	<50	630	<50
Cell 40	1	12/19/95	<10	<10	<10	<10	<10	<10	<10	23	140	<10
Cell 4	1	12/19/95	<10	<10	<10	<10	<10	<10	<10	<10	55	<10
Screening Criteria			10 ¹	1,500 ¹	7,000 ¹	17,500 ¹	17,500 ¹	17,500 ¹	100	1,000	10,000	

¹ - Cleanup criteria equals the maximum contaminant level (MCL) times 10

Created by: M. Williams
Reviewed by: E. Ferguson

Table 4
Soil Sample Analytical Results for Northwest Perimeter and Northeast Perimeter (Task 3)

Mobil Jalk Fee Property, Santa Fe Springs, California

Soil Boring Identification	Depth (feet)	Date Sampled	EPA Method 8020 (parts per billion, ppb)						EPA Method 8015 Modified (parts per million, ppm)				EPA Method 8240 (ppb)	EPA Method 8010 (ppb)
			Benzene	Toluene	Ethylbenzene	1,2-Xylene	1,3-Xylene	1,4-Xylene	Gasoline Range (C4-C12)	Diesel Range (C12-C22)	Motor Oil Range (C22-C32)	Heavy Hydrocarbon Range (C32-C40)	VOCs	HVOCS
MH-7	5	12/21/95	--	--	--	--	--	--	<10	<10	<10	<10	BRL	--
MH-7	10	12/21/95	--	--	--	--	--	--	<10	<10	<10	<10	BRL	--
MH-8	1	12/21/95	--	--	--	--	--	--	<500	<500	1600	<500	BRL	--
MH-8	5	12/21/95	--	--	--	--	--	--	<10	<10	<10	<10	BRL	--
MH-9	1	12/21/95	--	--	--	--	--	--	<10	<10	84 ¹	<10	BRL	--
MH-9	5	12/21/95	--	--	--	--	--	--	<10	<10	<10	<10	BRL	--
MH-10	1	12/21/95	--	--	--	--	--	--	<10	<10	<10	<10	BRL	--
MH-10	5	12/21/95	--	--	--	--	--	--	<10	<10	<10	<10	BRL	--
MH-10	10	12/21/95	--	--	--	--	--	--	<10	<10	<10	<10	BRL	--
MH-11	1	12/21/95	--	--	--	--	--	--	<500	<500	820	<500	BRL	--
MH-11	5	12/21/95	--	--	--	--	--	--	<10	<10	<10	<10	BRL	--
MH-11	10	12/21/95	--	--	--	--	--	--	<10	<10	<10	<10	BRL	--
Screening Criteria			10 ¹	1,500 ¹	7,000 ¹	17,500 ¹	17,500 ¹	17,500 ¹	100	1,000	10,000		Various	NC

-- - Not Analyzed

BRL - Below Reporting Limit

¹ - Cleanup criteria equals the maximum contaminant level (MCL) times 10

Created by: M. Williams

Reviewed by: E. Ferguson

Table 5
Soil Sample Analytical Results for PCE Impacted Area (Task 3)

Mobil Jalk Fee Property, Santa Fe Springs, California

Soil Boring Identification	Depth (feet)	Date Sampled	EPA Method 8010 (ppb)				
			cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Trichloroethene	Tetrachloroethene	Other Halogenated Volatile Organic Compounds
GP-19	5	12/21/95	BRL	BRL	BRL	BRL	BRL
GP-19	10	12/21/95	BRL	BRL	BRL	BRL	BRL
GP-19	15	12/21/95	BRL	BRL	BRL	75	BRL
GP-19	20	12/21/95	BRL	BRL	BRL	12	BRL
GP-19	25	12/21/95	BRL	BRL	BRL	220	BRL
GP-19	30	12/21/95	BRL	BRL	BRL	78	BRL
GP-19	35	12/21/95	BRL	BRL	BRL	340	BRL
GP-19	40	12/21/95	BRL	BRL	BRL	110	BRL
GP-20	5	12/22/95	BRL	BRL	BRL	55	BRL
GP-20	10	12/22/95	BRL	BRL	BRL	BRL	BRL
GP-20	15	12/22/95	BRL	BRL	BRL	BRL	BRL
GP-20	20	12/22/95	BRL	BRL	BRL	10	BRL
GP-20	25	12/22/95	BRL	BRL	BRL	920	BRL
GP-20	30	12/27/95	BRL	BRL	BRL	480	BRL
GP-20	35	12/27/95	BRL	BRL	24	100	BRL
GP-20	40	12/27/95	BRL	BRL	BRL	23	BRL
GP-21	5	12/27/95	BRL	BRL	BRL	BRL	BRL
GP-21	10	12/27/95	BRL	BRL	BRL	BRL	BRL
GP-21	15	12/27/95	BRL	BRL	BRL	20	BRL
GP-21	20	12/27/95	BRL	BRL	BRL	BRL	BRL
GP-21	25	12/27/95	BRL	BRL	BRL	170	BRL
GP-21	30	12/27/95	BRL	BRL	BRL	21	BRL
GP-21	35	12/27/95	BRL	BRL	40	560	BRL
GP-21	40	12/27/95	BRL	BRL	BRL	BRL	BRL
GP-22	5	12/27/95	BRL	BRL	BRL	BRL	BRL
GP-22	10	12/27/95	BRL	BRL	BRL	BRL	BRL
GP-22	15	12/27/95	BRL	BRL	BRL	BRL	BRL
GP-22	20	12/27/95	BRL	BRL	19	75	BRL
GP-22	25	12/27/95	BRL	BRL	BRL	BRL	BRL
GP-22	30	12/27/95	BRL	BRL	BRL	BRL	BRL
GP-22	35	12/27/95	20	BRL	41	BRL	BRL
GP-22	40	12/27/95	14	BRL	24	BRL	BRL
GP-23	5	12/27/95	11	12	50	BRL	BRL
GP-23	10	12/27/95	BRL	BRL	14	BRL	BRL

Table 5
Soil Sample Analytical Results for PCE Impacted Area (Task 3)

Mobil Jalk Fee Property, Santa Fe Springs, California

Soil Boring Identification	Depth (feet)	Date Sampled	EPA Method 8010 (ppb)				
			cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Trichloroethene	Tetrachloroethene	Other Halogenated Volatile Organic Compounds
GP-23	15	12/27/95	BRL	BRL	BRL	BRL	BRL
GP-23	20	12/27/95	BRL	BRL	BRL	BRL	BRL
GP-23	25	12/28/95	BRL	BRL	BRL	BRL	BRL
GP-23	30	12/28/95	10	BRL	10	21	BRL
GP-23	35	12/28/95	BRL	BRL	BRL	BRL	BRL
GP-23	40	12/28/95	BRL	BRL	BRL	BRL	BRL
GP-24	5	12/28/95	BRL	BRL	BRL	BRL	BRL
GP-24	10	12/28/95	BRL	BRL	BRL	BRL	BRL
GP-24	15	12/28/95	110	160	180	BRL	BRL
GP-24	20	12/28/95	BRL	BRL	BRL	BRL	BRL
GP-24	25	12/28/95	13	BRL	BRL	23	BRL
GP-24	30	12/28/95	BRL	BRL	BRL	BRL	BRL
GP-24	35	12/28/95	BRL	BRL	BRL	BRL	BRL
GP-24	40	12/28/95	BRL	BRL	BRL	BRL	BRL
MB-1	25	12/29/95	BRL	BRL	BRL	4100	BRL
MB-1	30	12/29/95	BRL	BRL	BRL	700	BRL
MB-1	35	12/29/95	BRL	BRL	22	2000	BRL
MB-1	40	12/29/95	BRL	BRL	BRL	170	BRL
MB-1	45	12/29/95	BRL	BRL	BRL	BRL	BRL
MB-1	50	12/29/95	BRL	BRL	BRL	BRL	BRL
MB-1	55	12/29/95	BRL	BRL	BRL	55	BRL
MB-1	59	12/29/95	BRL	BRL	BRL	BRL	BRL
MB-2	25	12/29/95	260	BRL	BRL	85	BRL
MB-2	30	12/29/95	970	BRL	76	260	BRL
MB-2	35	12/29/95	510	BRL	34	130	BRL
MB-2	40	12/29/95	15	BRL	BRL	BRL	BRL
MB-2	45	12/29/95	BRL	BRL	BRL	BRL	BRL
MB-2	50	12/29/95	BRL	BRL	BRL	BRL	BRL
MB-2	55	12/29/95	BRL	BRL	BRL	BRL	BRL
MB-2	59	12/29/95	BRL	BRL	BRL	BRL	BRL
Screening Criteria			60 ¹	100 ¹	50 ¹	50 ¹	Various

BRL - Below Reporting Limit

¹ - Cleanup criteria equals the maximum contaminant level (MCL) times 10

Created by: M. Williams

Reviewed by: E. Ferguson

Table 6
Soil Gas Survey Analytical Results for Former Trucking Operations Area (Task 3)

Mobil Jalk Fee Property, Santa Fe Springs, California

Soil Boring Identification	Depth (feet)	Date Sampled	EPA Method 8010 (ppb)				
			cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Trichloroethene	Tetrachloroethene	Other Halogenated Volatile Organic Compounds
SG-1	5	1/2/96	BRL	BRL	BRL	BRL	BRL
SG-1	10	1/2/96	BRL	BRL	BRL	BRL	BRL
SG-2	5	1/2/96	BRL	BRL	BRL	BRL	BRL
SG-2	10	1/2/96	BRL	BRL	BRL	BRL	BRL
SG-3	5	1/2/96	BRL	BRL	BRL	BRL	BRL
SG-3	10	1/2/96	BRL	BRL	BRL	BRL	BRL
SG-4	5	1/2/96	BRL	BRL	BRL	BRL	BRL
SG-4	10	1/2/96	BRL	BRL	BRL	3	BRL
SG-5	5	1/2/96	BRL	BRL	BRL	BRL	BRL
SG-5	10	1/2/96	BRL	BRL	BRL	BRL	BRL
SG-6	5	1/2/96	BRL	BRL	BRL	BRL	BRL
SG-6	10	1/2/96	BRL	BRL	BRL	BRL	BRL
SG-7	5	1/2/96	BRL	BRL	BRL	BRL	BRL
SG-7	10	1/2/96	BRL	BRL	BRL	BRL	BRL
SG-8	5	1/2/96	BRL	BRL	BRL	1	BRL
SG-8	8	1/2/96	BRL	BRL	BRL	BRL	BRL
SG-9	5	1/2/96	BRL	BRL	BRL	BRL	BRL
SG-9	10	1/2/96	BRL	BRL	BRL	BRL	BRL

BRL - Below Reporting Limit

¹ - Cleanup criteria equals the maximum contaminant level (MCL) times 10

Created by: M. Williams

Reviewed by: E. Ferguson

Figures

Appendix A

McLaren/Hart's Standard Protocols

McLAREN/HART STANDARD PROTOCOLS

COLLECTION OF SOIL SAMPLES USING A GEOPROBE

A Geoprobe is a truck-mounted hydraulically operated sampling unit designed to collect soil, soil gas, and groundwater samples at discrete depths. As no soil cuttings are generated during Geoprobe sampling, no cuttings require containerization, characterization and off-site disposal.

Soil samples were obtained by driving a two-foot long, brass-lined, stainless steel sampling tube equipped with an internal, moveable piston to a position just above the desired sampling depth. After the tube is properly positioned, the internal piston is released and the tube driven an additional twenty-four inches, allowing the soil to enter the tube. The sampling tube is then withdrawn and the soil sample removed from the tube within the brass liner.

The lower most tube from each sampled interval is trimmed of excess soil, sealed with squares of Teflon sheeting, and plastic end caps, labeled, and stored on ice in a thermally insulated ice chest. A sample label is attached to each sample tube identifying the date the sample was collected, a unique identification number, and other identifying information. Samples are couriered or shipped under chain-of-custody procedures to a State-certified hazardous waste testing laboratory.

A portion of the soil is extruded into a plastic airlock bag for headspace analysis. The bag is sealed immediately and left to stand for a few mixtures to allow volatile gases to enter the headspace of the bag. A photoionization detector (PID) calibrated to isobutylene or flame ionization detector (FID) is used in the field to analyze the headspace gases. Headspace readings are included on the soil boring logs.

Prior to sampling and between samples, all reusable sampling equipment is washed in a phosphate-free detergent solution, rinsed in tap water, and then rinsed in deionized water. Geoprobe borings are backfilled using bentonite granules.

COLLECTION OF SOIL SAMPLES USING A HAND AUGER

A 5-foot-long stainless steel hand auger, fitted with 5-foot long conduit extension(s) as needed, is used to drill an approximately 2- 1/4 inch-diameter boring to the proposed sample depth. Soil samples are collected at the appropriate depth as described in the scope of work. Prior to and between the sampling intervals, all reusable equipment is washed in a phosphate-free detergent solution, rinsed in tap water, and then rinsed in deionized water.

Each soil sample is collected by using a slide-hammer to drive a solid or split-spoon sampler lined with a 6-inch brass tube into the undisturbed soil at each sampling depth. The sample tubes are removed from the sampler, excess soil is trimmed, and each end of the sample tube is covered with Teflon squares and plastic end caps.

A sample label (or equivalent) is attached to each sample tube identifying the date the sample was collected, a unique identification number, and other identifying information. Soil samples are placed in a thermally insulated container with ice and shipped or couriered to a State-certified hazardous waste-testing laboratory using the appropriate chain-of-custody procedures.

COLLECTION OF SOIL SAMPLES USING A HOLLOW STEM AUGER DRILLING RIG

Prior to and between the sampling intervals, all reusable equipment is washed in a phosphate-free detergent solution, rinsed in tap water, and then rinsed in deionized water.

Soil samples are obtained in clean, 2-inch diameter, 3- or 6-inch-long brass tubes using an 18-inch California modified split-spoon sampler. Three six-inch tubes are inserted into the split-spoon sampler, which is driven into undisturbed soil ahead of the auger bit using a 140-pound hammer. Blow counts are recorded for each 6-inch driving interval.

The lowermost tube from each sampled interval is trimmed of excess soil, each end of the sample tube is covered with Teflon squares and plastic end caps. A sample label is attached to each sample tube identifying the date the sample was collected, a unique identification number, and other identifying information. Soil samples are placed in a thermally insulated container

with ice and shipped or couriered to a State-certified hazardous waste-testing laboratory using the appropriate chain-of-custody procedures.

The middle tube of the sample is inspected for texture, color, moisture content, hydrocarbon odor, and other distinguishing characteristics. The lithology is logged using the Unified Soils Classification System and is recorded on a soil boring log.

Approximately half of the soil in the middle or upper brass tube is extruded into a plastic airlock bag for headspace analysis. The bag is sealed immediately and left to stand for a few minutes to allow volatile gases to enter the headspace of the bag. A photoionization detector (PID) calibrated to isobutylene or flame ionization detector (FID) is used in the field to determine the concentration of volatile organic compounds (VOCs) which originate from the soil sample. Field VOC readings are included on the soil boring logs.

Soil cuttings generated by drilling are temporarily stored on-site in 55-gallon DOT approved drums, pending analytical results and proper disposal. Soil borings are backfilled to 1 foot below grade with hydrated bentonite chips or bentonite grout and finished to grade with asphalt patch, concrete, or native soil as appropriate.

Appendix B

Soil Boring Logs

Appendix C

Aerial Photograph Review Report



ENVIRONMENTAL ENGINEERING CORPORATION

January 29, 1996

Mr. Tom Walker
Senior Petroleum Engineer
Mobil Exploration and Producing U.S. Inc.
10735 South Shoemaker Avenue
Santa Fe Springs, CA 90670

**RE: AERIAL PHOTOGRAPH REVIEW OF THE JALK FEE PROPERTY LOCATED AT 10607
NORWALK BOULEVARD, SANTA FE SPRINGS, CALIFORNIA**

DRAFT

Dear Mr. Walker:

This report summarizes McLaren/Hart's recent aerial photograph review for the Jalk Fee Property located at 10607 Norwalk Boulevard, Santa Fe Springs, California. This work was performed as part of the change order entitled "Change Order for Mobil Jalk Fee Property, 10607 Norwalk Boulevard, Santa Fe Springs, California" dated December 19, 1995. The following are the results of the aerial photograph review conducted during the weeks of December 11 and 18, 1995.

Historical property use information was derived from a review of historical aerial photographs obtained from McLaren/Hart's files and available records at UCLA and Whittier College. Most photographic records were taken at altitudes that make the observations of buildings clear, although, smaller features could not be defined.

1927 (C-278-D8; McLaren/Hart)

It should be noted that the clarity of the aerial photograph was poor.

The subject site was orchards with one long and one short rectangular building on the west side of the subject site adjacent to an oil derrick. There appeared to be two additional oil derricks in the central portion and two ASTs on the southeast side of the subject site.

The property to the north appeared to have some ASTs and oil derricks.

The property to the south was orchards.

To the east of the subject site was Norwalk Boulevard, across which appeared to be undeveloped land.

DRAFT

The property to the west was orchards with approximately 16 ASTs further west.

1927 (113-561, -562 & -563; Whittier College)

The following details were visible in this aerial photograph that weren't distinguishable on the previous aerial:

- Two buildings were noted in the northeast portion of the subject site;
- Four ASTs and two buildings were noted in the southeast portion of the subject site;
- There were dark stains present on the soil adjacent to the two oil derricks that were furthest east and west on the subject site;
- Buildings were noted adjacent to the oil derricks located on the east and center areas of the subject site;
- The property to the north was developed with approximately 6 oil derricks along the center of the lot, approximately 2 to 3 ASTs in the southwest corner, 5 ASTs in the northwest portion of the lot, a few buildings in the center and a few buildings in the northeast corner. There were two dark stains located to the west of the ASTs in the southwest corner of the lot;
- There were approximately 3 buildings in the northeast corner of the property located to the south of the subject site;
- Approximately 2 ASTs and 2 oil derricks were noted on the property to the east of the subject site;
- Oil derricks were noted on the property to the west of the subject site.

1928 (C-278-D7; McLaren/Hart)

The subject site and surrounding properties appeared similar to the 1927 aerial photographs (113-561, -562 & -563; Whittier).

1928 (C300 M228; McLaren/Hart)

It should be noted that the clarity of this aerial photograph was poor.

The following changes were noted on the subject site:

- The subject site was developed with approximately 10 ASTs in the southeast corner;
- There was a dark rectangular area in the middle of the lot on both the eastern and western halves of the subject site;
- There appeared to be a rectangular building in the center of the subject site with two ASTs to the north of this building;
- There appeared to only one structure located in the northeast corner of the property located to the south of the subject site;

1928 (C300 K353; Whittier College)

The following details were visible in this aerial photograph that weren't distinguishable on the previous aerial:

- Two dark stains were noted to the east of the ASTs in the southeast corner of the subject site;
- There appeared to be two additional buildings located in the northeast corner of the subject site;
- There appeared to be a structure in the southwest corner of the subject site;
- Approximately 7 ASTs were noted in the northeast section and approximately 7 to 8 ASTs were noted in the northwest section of the property located to the north of the subject site;
- Approximately 5 ASTs were noted on the property located to the east of the subject site.

1928 (C300 K 379; Whittier College)

The subject site and surrounding properties appeared similar to the other 1928 aerial photographs, except that it appeared there were two structures along the southern border (in the center) of the subject site.

1928 (C278-D6, -D7 & -D8; Whittier College)

The subject site and surrounding properties appeared similar to the previous 1928 aerial photographs.



ENVIRONMENTAL ENGINEERING CORPORATION

April 28, 1938 (5147-6 & -7; Whittier College)

The subject site was developed with 2 structures in the northeast corner with a pond/lagoon to the south, a building further south, and an oil derrick to the east. On the northern border in the center and western portion of the lot there was an oil derrick with a building to the east of each derrick. On the east side of the lot towards the south there were 3 small buildings with 6 ASTs to the west; it appeared that there was a pipeline to the south of the ASTs. This area also appeared to be divided into 10 bermed sections.

The property to the north of the subject site was developed with 7 ASTs in the southwest corner, 6 ASTs in the northwest corner, 5 ASTs in the center towards the east and two ponds/lagoons in the center of the lot. There also appeared to be a rectangular structure and a circular structure in the southeast corner of the lot.

The property to the south was orchards. The building in the northeast corner was no longer visible.

To the east of the subject site was Norwalk Boulevard, across which were a few small buildings, approximately 3 to 5 ASTs and an oil derrick with a building adjacent to the derrick.

The property to the west was graded with a few oil derricks.

January 1, 1945 (C-9250 75; McLaren/Hart)

The subject site was developed with buildings in the northeast corner; the number of buildings was not distinguishable. There were approximately three to five ASTs in the northwest corner of the subject site. There were also two oil derricks on the subject site; one was located in the center of the east side of the lot and the other was located in the northwest corner adjacent to the ASTs. There also appeared to be two small buildings next to the ASTs; one to the north and one to the east.

The property to the north had approximately three ASTs in the southeast corner of the property and twelve ASTs on the west side of the property, six of which were located along the southern property line. There were also two oil derricks on the east side and approximately two to three oil derricks on the west side of the property.

The property to the south was developed with approximately four oil derricks and a few buildings.

To the east of the subject site was Norwalk Boulevard across which was approximately two to three ASTs and one oil derrick.

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To the west of the subject site were a few small buildings.

January 1, 1945 (C-9250-74, -75 & -76 and C-9250-97 & -98; Whittier College)

The subject site and surrounding properties appeared similar to the other January 1945 aerial photograph. However, it should be noted that these aerials did not cover the western portion of the subject site or the properties to the west of the subject site.

June 18, 1947 (C-11351 #8-67; McLaren/Hart)

The subject site and immediate surrounding areas appeared similar to the January 1945 aerial photographs.

February 8, 1949 (C-13373-2-59, -60 & -84; Whittier College)

The subject site and immediate surrounding areas appeared similar to the June 1947 aerial photograph.

November 11, 1949 (E63-8, -9 & -10; UCLA)

The subject site and immediate surrounding areas appeared similar to the February 1949 aerial photograph.

January 13, 1950 (0-11086; UCLA)

The subject site remained the same as in the 1940s aerial photographs with the following exceptions:

- There appeared to be four oil derricks in this aerial photograph, instead of two, and
- A building was visible to the north of the oil derrick located in the north central portion of the subject site.

The surrounding properties also remained similar with the exception of additional oil derricks.

December 24, 1950 (11793 & 11794; UCLA)

The subject site and surrounding properties appeared similar to the January 1950 aerial photograph.



ENVIRONMENTAL ENGINEERING CORPORATION

December 24, 1950 (11784-63; UCLA)

The subject site and surrounding properties appeared similar to the January 1950 aerial photograph. However, it should be noted that the aerial photograph did not cover the western portion of the subject site or the properties to the west of the subject site.

January 7, 1951 (E63-12, -14, -15 & -16; UCLA)

The subject site and the surrounding properties appeared similar to the 1950 aerial photographs with the following exceptions:

- There were several dark spots in the center of the subject site and six ASTs were visible in the northwest corner of the subject site.
- It appeared that there were two ponds/lagoons (dark rectangles) on the property to the north of the subject site; one was located in the middle of the western portion of the lot and the other was located in the middle of the eastern portion of the lot.

May 8, 1953 (C-19375-6-44, -45 & -46 and C-19400-2-22, -23, -24 and C-19400-1-17; Whittier College)

The subject site was developed with 4 buildings in the northeast corner and 4 ASTs in the northwest corner of the subject site. There were approximately 2 oil derricks along the southern boundary and one oil derrick along the northern boundary.

The surrounding area appeared similar to the January 1951 aerial photograph.

October 19, 1953 (AXJ-1952-13K-148; McLaren/Hart)

The subject site and surrounding area appeared similar to the May 1953 aerial photograph.

August 30, 1954 (E-63-58 & -59; UCLA)

Based on the scale and angle of the aerial photograph, individual features were hard to distinguish on the subject site as well as the surrounding properties.

August 9, 1955 (C-22218A-1-36; Whittier College)

The subject site appeared similar to the October 1953 aerial photograph except that a structure was observed towards the center of the lot to the west of the existing buildings.

Mr. Tom Walker
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The surrounding properties appeared similar to the May 1953 aerial photograph except that there appeared to be more buildings in the southeast portion of the property located south of the subject site.

August 15, 1955 (C-2221813-40 & -79; Whittier College)

The building in the center of the subject site towards the west of the buildings in the northeast was more visible. There was a chain linked fence around the building with vacant land to the west of the building (within the fence).

The remainder of the subject site and the surrounding properties appeared similar to the August 9, 1955 aerial photograph.

September 1955 (C-22246-1-20, -21, -26 & -27; Whittier College)

The subject site and surrounding properties appeared similar to the other 1955 aerial photographs.

July 15, 1956 (22555-20-42; McLaren/Hart)

The subject site was developed with buildings in the northeast corner, ASTs in the northwest corner and a building in the center of the lot on the east side of the lot. There also appeared to be a few buildings along the northern boundary in the center of the lot. On the western half of the lot were approximately three oil derricks.

The property to the north was mainly developed on the western half. There were 7 ASTs on the southwest corner of the lot (adjacent to the subject site). There were also a few oil derricks on the lot.

The property to the south was partially developed with a few buildings in the central portion of the lot. There were also a few oil derricks on the lot.

To the east of the subject site was Norwalk Boulevard, across which were a few small structures.

To the west of the subject site were a few buildings on a mainly undeveloped lot. There were also a few oil derricks on the lot.

August 24, 1956 (C-22596-1-56 & -57; Whittier College)

The subject site and the surrounding properties appeared similar to the July 1956 aerial photograph.



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May 4, 1957 (84-V-1-5; McLaren/Hart)

The subject site and immediate surrounding properties appeared similar to the August 1956 aerial photograph.

January 17, 1958 (C-23023 #5-14; McLaren/Hart)

It should be noted that the features on the subject site and immediate surrounding properties were not clear due to the scale of the aerial photograph.

The subject site and immediate surrounding areas appeared similar to the May 1957 aerial photograph with the following exceptions:

- The building that was visible in the center of the eastern portion of the subject site and the buildings located along the northern boundary of the subject site in the 1957 aerial photograph were no longer visible;
- The eastern $\frac{2}{3}$ of the subject site was graded; and
- There appeared to be 6 instead of 7 ASTs located in the southwest corner of the property located to the north of the subject site.

September 8, 1958 (C-23224-1-93 & -94 and C-23224-2-235 & -236; Whittier College)

The subject site and surrounding properties appeared similar to the January 1958 aerial photograph with the exception that the fenced in structure that was noted in the August 15, 1955 aerial photograph was again visible in this aerial photograph. Also, within this fenced in area, there was a dark stain on the soil adjacent to the building.

September 24, 1958 (E-63-108; UCLA)

Based on the scale and angle of the aerial photograph, individual features were hard to distinguish on the subject site as well as the surrounding properties.

1958 (C-23023-5-15; Whittier College)

Based on the scale and angle of the aerial photograph, individual features were hard to distinguish on the subject site as well as the surrounding properties.

December 23, 1960 (E-63-131 & -132; UCLA)

The subject site was developed with five buildings in the northeast corner of the lot. An oil derrick was visible near the buildings. Also, there were approximately 5 ASTs in the northwest corner of the subject site.

The property to the north was developed on both the east and west side. In the center of this lot, there was a rectangular building with approximately 4 stack pipes extending out of the roof. The lagoon/pond was visible on the east side of the property. There were also approximately 6 ASTs along the southern boundary in the southwest portion of the lot and approximately 5 ASTs along the northern boundary in the northwest portion of the lot. There were approximately 4 oil derricks on the property.

The property to the south was mainly undeveloped or agricultural land with four small structures in the center of the lot and several buildings (approximately 5 to 7) in the southeast corner of the lot.

To the east of the subject site was Norwalk Boulevard, across which were approximately 2 ASTs and a dark rectangular stain on the soil.

The property to the west of the subject site was an oil field.

March 13, 1962 (157V98; McLaren/Hart)

The subject site appeared similar to the December 1960 aerial photograph.

There were thirteen ASTs on the property to the north with seven of them on the south side bordering the subject site. There were also two oil rigs located on the western half of the property. In the center of the western half, there was a dark rectangular stain on the soil that resembled a pond or lagoon. On the eastern half of this property, there were two adjacent stains on the soil that resembled a pond or lagoon.

The property to the south was mainly undeveloped or agricultural land with a few small buildings in the center of the property and several buildings in the southeast corner of the property.

The property to the east (passed Norwalk Boulevard) is mainly undeveloped land with a few small buildings and between one and two ASTs.

To the west of the subject site was oil fields.

March 13, 1962 (157V86; McLaren/Hart)

The following features were noted in this aerial photograph that were not distinguishable in the previous March 13, 1962 aerial photograph:

- There appeared to be two standpipes at the southeast corner of the ASTs on the subject site.
- There appeared to be a structure to the east of the ASTs located on the subject site.
- There also appeared to be two rectangular structures in the southwest portion of the subject site.

The properties to the north, south, east and west appeared similar to the other March 13, 1962 aerial photograph (157V98; McLaren/Hart).

November 20, 1962 (C-24385-4-18 & -19; Whittier College)

The subject site and surrounding properties appeared similar to the other 1962 aerial photographs.

January 7, 1963 (E-63-144 & -145; UCLA)

Based on the scale and angle of the aerial photograph, individual features were hard to distinguish on the subject site as well as the surrounding properties.

June 24, 1963 (216V-56; McLaren/Hart)

The following differences were noted on the subject site from the March 1962 aerial photograph:

- To the south of the structures in the northeast corner, there was a dark horseshoe shaped stain on the soil;
- In the southwest corner was a dark circular stain on the soil;
- To the north of the ASTs, there was a small structure with a sloped roof.

The properties to the north, south, east and west appeared similar to the 1962 aerial photographs.

June 24, 1963 (216V55; McLaren/Hart)

The subject site and the surrounding properties appeared similar to the 216V55 aerial photograph.

August 22, 1964 (E-63-155; UCLA)

The subject site and the immediate surrounding areas appeared similar to the 1963 aerial photographs.

The property to the north was undeveloped on the eastern half of the property; however, it did appear that a portion of the lagoon/pond was still present. The remainder of the property appeared similar to the 1963 aerial photographs.

January 16, 1965 (E-63-161; UCLA)

Based on the scale and angle of the aerial photograph, individual features were hard to distinguish on the subject site as well as the surrounding properties.

April 11, 1966 (E-63-184 & -193; UCLA)

Based on the scale and angle of the aerial photograph, individual features were hard to distinguish on the subject site as well as the surrounding properties.

April 15, 1966 (E-63-198 & -199; UCLA)

It should be noted that the clarity of this aerial photograph was poor.

The subject site and the surrounding properties to the south, east and west appeared similar to the August 1964 aerial photograph.

The property to the north of the subject site appeared to be undeveloped.

September 23, 1968 (2400 5-218; McLaren/Hart)

The subject site was developed with buildings on the northeast corner and approximately 2 to 3 ASTs in the northwest corner.

The property to the north was undeveloped.

The property to the south was mainly undeveloped with some buildings in the southeast corner of the lot.

DRAFT

To the east of the subject site was Norwalk Boulevard, across which were two commercial/industrial buildings.

The property to the west was mainly undeveloped with a few oil derricks.

February 3, 1969 (E-63-232; UCLA)

There were no significant changes noted to either the subject site or the surrounding properties from the September 1968 aerial photograph.

March 22, 1976 (7600 7-14; McLaren/Hart)

The subject site was developed with a long rectangular building in the northeast corner of the lot with 3 smaller buildings to the west. There were ASTs in the northwest corner.

The property to the north was developed with commercial/industrial buildings.

The property to the south was developed with a building in the northeast corner (adjacent to the subject site).

To the east of the subject site was Norwalk Boulevard, across which was a commercial/industrial area.

The property to the west was mainly undeveloped.

October 28, 1980 (1280-119; McLaren/Hart)

It should be noted that due to the scale of this aerial photograph, individual features on the subject site as well as the surrounding properties were not clear.

The subject site and immediate surrounding area appeared similar to the March 1976 aerial photograph with the exception that there appeared to be only two buildings in the northeast corner of the subject site.



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DRAFT

McLaren/Hart appreciates the opportunity to provide consulting services for Mobil Exploration and Producing U.S. Inc. If you have any questions, please do not hesitate to contact me at (714) 752-3268.

Sincerely,

Kristina L. Parke

Kristina L. Parke
Assistant Environmental Scientist

Donald G. Koch

Donald G. Koch
Principal Regulatory Compliance
Management



ENVIRONMENTAL ENGINEERING CORPORATION

SB/MW#: MH-4
#D- 15597
Page 1 of 1
Sampler: T. Overturf

PROJECT Mobil Jalk Fee LOCATION 10607 Norwalk Blvd., Santa Fe Springs
ELEVATION _____ MONITORING DEVICE PID
SAMPLING DATE(S) 12-29-95 START 9:15 AM FINISH 11:00 AM
SAMPLING METHOD CA MOD SPLIT SPOON SUBCONTRACTOR & EQUIPMENT BC2 Environmental
MEMO _____

[illegible]

SB/MW#: MH-10#D- 15598Page 1 of 1Sampler: T. Overturf**SOIL DRILLING LOG**

PROJECT Mobil Jalk Fee LOCATION 10607 Norwalk Blvd., Santa Fe Springs
 ELEVATION _____ MONITORING DEVICE PID
 SAMPLING DATE(S) 12-29-95 START _____ FINISH _____
 SAMPLING METHOD CA MOD SPLIT SPOON SUBCONTRACTOR & EQUIPMENT BC2 Environmental
 MEMO _____

Depth Below Surface (ft.)	Penetration Results		Sampler Depth Interval (ft.)	Sample ID #	Hnu Reading (ppm)	Soil Description Color, Texture, Moisture, Etc.	Unified Class.	Graphic Log	Sample Depth	Borehole Abandonment/ Well Construction Details
	Blows 6"-6'-6"	BPF								
0.0										
5						Slit* (0,10,90,0); strong brown (7.5YR 4/6); (100% fine); dense; damp to dry.	ML			
10						@5' Becomes slightly clayey.				
15						@15' Dark grayish brown (2.5Y 4/2).				
20										
24.0										
25.0						Silty clay: (0,0,30,70); medium dense; low plasticity; damp.	CL			
30										
35										
40										
45										
50										
55										
60										
65										
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985										
990										
995										
1000										

Backfilled with Hydrated Bentonite Chips

T.D. = 25'

SB/MW#: MH-11
 #D- 15599
 Page 1 of 1
 Sampler: T. Overturf

SOIL DRILLING LOG

PROJECT Mobil Jalk Fee LOCATION 10607 Norwalk Blvd., Santa Fe Springs
 ELEVATION _____ MONITORING DEVICE PID
 SAMPLING DATE(S) 12-29-95 START _____ FINISH _____
 SAMPLING METHOD CA MOD SPLIT SPOON SUBCONTRACTOR & EQUIPMENT BC2 Environmental
 MEMO _____

Depth Below Surface (ft.)	Penetration Results		Sampler Depth Interval (ft.)	Sample ID #	Hvu Reading (ppm)	Soil Description Color, Texture, Moisture, Etc.	Unified Class.	Graphic Log	Sample Depth	Borehole Abandonment/ Well Construction Details
	Blows 6"-6'-6"	BPF								
0.0						Silt* (0,10,90,0); strong brown (7.5YR 4/6); (100% fine); dense; damp to dry.	ML			
5						@5' Becomes slightly clayey.				
10										
15						@15' Dark grayish brown (2.5Y 4/2).				
20										
24.0										
25.0						Silty clay: (0,0,40,60); medium dense; low plasticity; damp.	CL			
30										
35										
40										

Backfilled with Hydrated Bentonite Chips

T.D. = 25'

SOIL DRILLING LOG

SB/MW#: MH-4
 #D- 15597
 Page 1 of 1
 Sampler: T. Overturf

DRAFT

PROJECT Mobil Jalk Fee LOCATION 10607 Norwalk Blvd., Santa Fe Springs
 ELEVATION _____ MONITORING DEVICE PID
 SAMPLING DATE(S) 12-29-95 START 9:15 AM FINISH 11:00 AM
 SAMPLING METHOD CA MOD SPLIT SPOON SUBCONTRACTOR & EQUIPMENT BC2 Environmental
 MEMO _____

Depth Below Surface (ft.)	Penetration Results		Sampler Depth Interval (ft.)	Sample ID #	Hnu Reading (ppm)	Soil Description Color, Texture, Moisture, Etc.	Unified Class.	Graphic Log	Sample Depth	Borehole Abandonment/ Well Construction Details
	Blows 6"-6'-6"	BPF								
0.0										
5						@5' Sandy silt (0,30,60,10); strong brown (7.5YR 4/6); (100% fine); medium dense; damp.	ML			Backfilled with Hydrated Bentonite Chips
10										
15						15.0 Sand: (0,90,10,0); dark grayish brown (2.5Y 4/2); medium dense; damp.	SM			
20						20.0 Silt: (0,0,100,0); medium dense; damp.	ML			
25										T.D. = 40'
30						@30' Becomes clayey.				
35										
40						40.0				

SOIL DRILLING LOG

SB/MW#: **MH-10**

#D- **15598**

Page **1** of **1**

Sampler: **T. Overturf**

DRAFT

PROJECT Mobil Jalk Fee LOCATION 10607 Norwalk Blvd., Santa Fe Springs
 ELEVATION _____ MONITORING DEVICE PID
 SAMPLING DATE(S) 12-29-95 START _____ FINISH _____
 SAMPLING METHOD CA MOD SPLIT SPOON SUBCONTRACTOR & EQUIPMENT BC2 Environmental
 MEMO _____

Depth Below Surface (ft.)	Penetration Results		Sampler Depth Interval (ft.)	Sample ID #	Hnu Reading (ppm)	Soil Description Color, Texture, Moisture, Etc.	Unified Class.	Graphic Log	Sample Depth	Borehole Abandonment/ Well Construction Details
	Blows 6"-6'-6"	BPF								
0.0						Silt (0,10,90,0); strong brown (7.5YR 4/6); (100% fine); dense; damp to dry.	ML			
5						@5' Becomes slightly clayey.				
10										
15						@15' Dark grayish brown (2.5Y 4/2).				
20										
24.0										
25.0						Silty clay: (0,0,30,70); medium dense; low plasticity; damp.	CL			
25										
30										
35										
40										

Backfilled with Hydrated Bentonite Chips

T.D. = 25'

DRAFT
Norwalk Bd. of
PID

Sampler: T. Overturf

DRAFT
Norwalk Bd. of
PID

PROJECT Mobil Jalk Fee LOCATION 10607 Norwalk Blvd, Santa Fe Springs
ELEVATION _____ MONITORING DEVICE PID
SAMPLING DATE(S) 12-29-95 START _____ FINISH _____
SAMPLING METHOD CA MOD SPLIT SPOON SUBCONTRACTOR & EQUIPMENT BC2 Environmental
MEMO _____

Depth Below Surface (ft.)	Penetration Results		Sampler Depth Interval (ft.)	Sample ID #	Hru Reading (ppm)	Soil Description Color, Texture, Moisture, Etc.	Unified Class.	Graphic Log	Sample Depth	Borehole Abandonment/ Well Construction Details
	Blows 6"-6'-6"	BPF								
0.0						Silt (0,10,90,0); strong brown (7.5YR 4/6); (100% fine); dense; damp to dry. @5' Becomes slightly clayey. @15' Dark grayish brown (2.5Y 4/2).	ML			
24.0										
25.0						Silty clay: (0,0,40,60); medium dense; low plasticity; damp.	CL			T.D. = 25'

DRAFT

#D-

Page 1 of 2

Sampler: E. Ferguson

LOCATION 10607 Norwalk Blvd., Santa Fe Springs

ELEVATION

MONITORING DEVICES (QVM) Model 580B

SAMPLING DATE(S) 12-22-95

START

FINISH

SAMPLING METHOD

SUBCONTRACTOR & EQUIPMENT

Vironex - Geoprobe

MEMO

Depth Below Surface (ft.)	Penetration Results		Sampler Depth Interval (ft.)	Sample ID #	Hnu Reading (ppa)	Soil Description Color, Texture, Moisture, Etc.	Unified Class.	Graphic Log	Sample Depth	Borehole Abandonment/ Well Construction Details
	Blows 6"-6'-6"	BPF								
0.0										
5			4.0 6.0			Silty sand: (0,65,45,0); dark brown (7.5YR 3/2); (5% medium, 45% fine, 50% very fine sand); poorly graded; medium dense; damp.	SM			Backfilled with Hydrated Bentonite Granules
10			9.0 11.0		10.0	Sand: (0,90,10,0); dark brown (7.5YR 3/2); (10% medium, 90% fine to very fine sand); poorly graded; medium dense; damp.	SP			
15			14.0 16.0			@15' Sand: (0,100,0,0); brown (7.5YR 4/3); (60% medium, 20% fine, 20% very fine sand); graded; medium dense; damp.				
20			19.0 21.0		20.0	Silty sand: (0,70,30,0); brown (7.5YR 4/4); (100% fine to very fine sand); poorly graded; dense; dry.	SM			
25			24.0 26.0			@25' Same as 20'.				
30			29.0		30.0					
Continued Next Page										

Continued Next Page

SB/MW#: **GP-19**

#D- _____

Page **2** of **2**Sampler: **E. Ferguson****SOIL DRILLING LOG****DRAFT**PROJECT **Mobil Jalk Fee** LOCATION **10607 Norwalk Blvd., Santa Fe Springs**

Depth Below Surface (ft.)	Penetration Results		Sampler Depth Interval (ft.)	Sample ID #	Hnu Reading (ppm)	Soil Description Color, Texture, Moisture, Etc.	Unified Class.	Graphic Log	Sample Depth	Borehole Abandonment/ Well Construction Details
	Blows 6"-6'-6"	BPF								
			31.0			Sandy silt: (0,15,80,15); brown (10YR 4/3); non-plastic; stiff; dry.	ML			
35			34.0 36.0			@35' Sandy silt: (0,23,70,7); brown (10YR 4/3); non-plastic; stiff; damp.				
40			39.0 41.0			40.0				
						41.0 Sand: (5,95,0,0); dark gray (salt and pepper) (2.5Y 4/1); (25% very coarse to coarse, 50% medium, 25% fine sand); well graded; dense; damp.	SW			
45										
50										
55										
60										
65										

T.D. = 41'

SOIL DRILLING LOG

SB/MW#: GP-20

#D-

Page 1 of 2

Sampler: E. Ferguson

DRAFT

PROJECT Mobil Jalk Fee LOCATION 10607 Norwalk Blvd., Santa Fe Springs
 ELEVATION MONITORING DEVICE RD (QVM) Model 580B
 SAMPLING DATE(S) 12-22-95 START FINISH
 SAMPLING METHOD SUBCONTRACTOR & EQUIPMENT Vironex - Geoprobe
 MEMO

Depth Below Surface (ft.)	Penetration Results		Sampler Depth Interval (ft.)	Sample ID #	Hru Reading (ppm)	Soil Description Color, Texture, Moisture, Etc.	Unified Class.	Graphic Log	Sample Depth	Borehole Abandonment/ Well Construction Details
	Blows 6"-6'-6"	BPF								
0.0										
5			4.0 6.0			Silty sand: (0,65,45,0); dark brown (7.5YR 3/2); (5% medium, 45% fine, 50% very fine sand); poorly graded; medium dense; damp.	SM			Backfilled with Hydrated Bentonite Granules
10			9.0 11.0			10.0 Sand: (0,90,10,0); dark brown (7.5YR 3/2); (10% medium, 90% fine to very fine sand); poorly graded; medium dense; damp.	SP			
15			14.0 16.0			@15' Sand: (0,100,0,0); brown (7.5YR 4/3); (60% medium, 20% fine, 20% very fine sand); graded; medium dense; damp.				
20			19.0 21.0			20.0 Silty sand: (0,70,30,0); brown (7.5YR 4/4); (100% fine to very fine sand); poorly graded; dense; dry.	SM			
25			24.0 26.0			@25' Same as 20'.				Backfilled with Hydrated Bentonite Granules
30			29.0			30.0				

Continued Next Page

SB/MW#: GP-20#D- Page 2 of 2Sampler: E. Ferguson

SOIL DRILLING LOG

DRAFT

PROJECT Mobil Jalk Fee LOCATION 10607 Norwalk Blvd, Santa Fe Springs

Depth Below Surface (ft.)	Penetration Results		Sampler Depth Interval (ft.)	Sample ID #	Hnu Reading (ppm)	Soil Description Color, Texture, Moisture, Etc.	Unified Class.	Graphic Log	Sample Depth	Borehole Abandonment/ Well Construction Details
	Blows 6"-6'-6"	BPF								
			31.0			Sandy silt: (0,15,80,15); brown (10YR 4/3); non-plastic; stiff; dry.	ML			
35			34.0 36.0			@35' Sandy silt: (0,23,70,7); brown (10YR 4/3); non-plastic; stiff; damp.				
40			39.0 41.0							
					40.0					
					41.0	Sand: (5,95,0,0); dark gray (salt and pepper) (2.5Y 4/1); (25% very coarse to coarse, 50% medium, 25% fine sand); well graded; dense; damp.	SW			
45										
50										
55										
60										
65										

T.D. = 41'

DRAFT

#D-

Page 1 of 2

Sampler: E. Ferguson

PROJECT Mobil Jalk Fee LOCATION 10607 Norwalk Blvd., Santa Fe Springs
ELEVATION _____ MONITORING DEVICE PID (OVM) Model 580B
SAMPLING DATE(S) 12-22-95 START _____ FINISH _____
SAMPLING METHOD _____ SUBCONTRACTOR & EQUIPMENT Vironex - Geoprobe
MEMO _____

MEMO

Depth Below Surface (ft.)	Penetration Results		Sampler Depth Interval (ft.)	Sample ID #	Hru Reading (ppm)	Soil Description Color, Texture, Moisture, Etc.	Unified Class.	Graphic Log	Sample Depth	Borehole Abandonment/ Well Construction Details
	Blows 6"-6'-6"	BPF								
0.0										
5			4.0 6.0			Silty sand: (0,65,45,0); dark brown (7.5YR 3/2); (5% medium, 45% fine, 50% very fine sand); poorly graded; medium dense; damp.	SM			Backfilled with Hydrated Bentonite Granules
10			9.0 11.0		10.0	Sand: (0,90,10,0); dark brown (7.5YR 3/2); (10% medium, 90% fine to very fine sand); poorly graded; medium dense; damp.	SP			
15			14.0 16.0			@15' Sand: (0,100,0,0); brown (7.5YR 4/3); (60% medium, 20% fine, 20% very fine sand); graded; medium dense; damp.				
20			19.0 21.0		20.0	Silty sand: (0,70,30,0); brown (7.5YR 4/4); (100% fine to very fine sand); poorly graded; dense; dry.	SM			
25			24.0 26.0			@25' Same as 20'.				
30			29.0		30.0					
Continued Next Page										

DRAFT
Norwalk Blvd.

#D-_____

Page 2 of 2

Sampler: E. Ferguson

PROJECT	Mobil Jalk Fee	LOCATION	10607 Norwalk Blvd., Santa Fe Springs
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[illegible]

SOIL DRILLING LOG

SB/MW#: GP-22
 #D- _____
 Page 1 of 2
 Sampler: E. Ferguson

DRAFT

PROJECT Mobil Jalk Fee LOCATION 10607 Norwalk Blvd., Santa Fe Springs
 ELEVATION _____ MONITORING DEVICE ID (QVM) Mod 580B
 SAMPLING DATE(S) 12-27-95 START _____ FINISH _____
 SAMPLING METHOD _____ SUBCONTRACTOR & EQUIPMENT Vironex - Geoprobe
 MEMO _____

Depth Below Surface (ft.)	Penetration Results		Sampler Depth Interval (ft.)	Sample ID #	Hnu Reading (ppm)	Soil Description Color, Texture, Moisture, Etc.	Unified Class.	Graphic Log	Sample Depth	Borehole Abandonment/ Well Construction Details
	Blows 6"-6'-6"	BPF								
0.0										
5			4.0 6.0			Silty sand: (0,60,40,0); dark brown (7.5YR 3/2); (5% medium, 45% fine, 50% very fine sand); poorly graded; medium dense; damp.	SM			Backfilled with Hydrated Bentonite Granules
10			9.0 11.0		10.0	Sand: (0,90,10,0); dark brown (7.5YR 3/2); (10% medium, 90% fine to very fine sand); poorly graded; medium dense; damp.	SP			
15			14.0 16.0		15.0	Silt: (0,5,95,0); brown (7.5YR 5/4); non-plastic; stiff; damp.	ML			
20			19.0 21.0			@20' Clayey Silt: (0,0,90,10); light brown (7.5YR 6/4); low plasticity; stiff; dry; odorous.				
25			24.0 26.0			Silt: (0,5,90,5); brown; (7.5YR 5/4); low plasticity; stiff; dry.				
30			29.0							

Continued Next Page

SOIL DRILLING LOG

SB/MW#: GP-22

#D-

Page 2 of 2

Sampler: E. Ferguson

DRAFT

PROJECT Mobil Jalk Fee LOCATION 10607 Norwalk Blvd, Santa Fe Springs

Depth Below Surface (ft.)	Penetration Results		Sampler Depth Interval (ft.)	Sample ID #	Hnu Reading (ppm)	Soil Description Color, Texture, Moisture, Etc.	Unified Class.	Graphic Log	Sample Depth	Borehole Abandonment/ Well Construction Details
	Blows 6"-6'-6"	BPF								
31.0			31.0			@30' Sandy silt: (0,15,80,5); brown (10YR 4/3); non-plastic; stiff; dry.				
35			34.0 36.0			@35' Sandy silt: (0,25,70,5); brown (10YR 4/3); non-plastic; stiff; damp.				
40			39.0 41.0		40.0					
					41.0	Sand: (5,95,0,0); dark gray (salt and pepper) (2.5Y 4/1); (25% very coarse to coarse, 50% medium, 25% fine sand); well graded; dense; damp.	SW			
45										
50										
55										
60										
65										

T.D. = 41'

SB/MW#: **GP-23**
 #D- _____
 Page 1 of 2
 Sampler: **E. Ferguson**

SOIL DRILLING LOG

PROJECT **Mobil Jalk Fee** LOCATION **10607 Norwalk Blvd., Santa Fe Springs**
 ELEVATION _____ MONITORING DEVICE **PID (OVM) Mod 550B**
 SAMPLING DATE(S) **12-27-95** START _____ FINISH _____
 SAMPLING METHOD _____ SUBCONTRACTOR & EQUIPMENT **Vironex - Geoprobe**
 MEMO _____

Depth Below Surface (ft.)	Penetration Results		Sampler Depth Interval (ft.)	Sample ID #	Hnu Reading (ppm)	Soil Description Color, Texture, Moisture, Etc.	Unified Class.	Graphic Log	Sample Depth	Borehole Abandonment/ Well Construction Details
	Blows 6"-6'-6"	BPF								
0.0										
5			4.0 6.0			Silty sand: (0,60,40,0); dark brown (7.5YR 3/2); (5% medium, 45% fine, 50% very fine sand); poorly graded; medium dense; damp.	SM			Backfilled with Hydrated Bentonite Granules
10			9.0 11.0		10.0	Sand: (0,90,10,0); dark brown (7.5YR 3/2); (10% medium, 90% fine to very fine sand); poorly graded; medium dense; damp.	SP			
15			14.0 16.0		15.0	Silt: (0,5,95,0); brown (7.5YR 5/4); non-plastic; stiff; damp.	ML			
20			19.0 21.0			@20' Clayey silt: (0,0,90,10); light brown (7.5YR 6/4); low plasticity; stiff; dry; odorous.				
25			24.0 26.0			Silt: (0,5,90,5); brown; (7.5YR 5/4); low plasticity; stiff; dry.				
30			29.0							

Continued Next Page

SB/MW#: GP-23#D- Page 2 of 2Sampler: E. Ferguson**SOIL DRILLING LOG**PROJECT Mobil Jalk Fee LOCATION 10607 Norwalk Blvd., Santa Fe Springs

Depth Below Surface (ft.)	Penetration Results		Sampler Depth Interval (ft.)	Sample ID #	Hnu Reading (ppm)	Soil Description Color, Texture, Moisture, Etc.	Unified Class.	Graphic Log	Sample Depth	Borehole Abandonment/ Well Construction Details
	Blows 6"-6'-6"	BPF								
			31.0			@30' Sandy silt: (0,15,80,5); brown (10YR 4/3); non-plastic; stiff; dry.				
35			34.0 36.0			@35' Sandy silt: (0,25,70,5); brown (10YR 4/3); non-plastic; stiff; damp.				
40			39.0 41.0							
						40.0				
						41.0 Sand: (5,95,0,0); dark gray (salt and pepper) (2.5Y 4/1); (25% very coarse to coarse, 50% medium, 25% fine sand); well graded; dense; damp.	SW			
45										
50										
55										
60										
65										

T.D. = 41'

SOIL DRILLING LOG

SB/MW#: **GP-24**

#D- _____

Page **1** of **2**

Sampler: **E. Ferguson**

DRAFT

PROJECT **Mobil Jalk Fee** LOCATION **10607 Norwalk Blvd., Santa Fe Springs**
 ELEVATION _____ MONITORING DEVICE **ID (OVM) Mod 580B**
 SAMPLING DATE(S) **12-27-95** START _____ FINISH _____
 SAMPLING METHOD _____ SUBCONTRACTOR & EQUIPMENT **Vironex - Geoprobe**
 MEMO _____

Depth Below Surface (ft.)	Penetration Results		Sampler Depth Interval (ft.)	Sample ID #	Hnu Reading (ppm)	Soil Description Color, Texture, Moisture, Etc.	Unified Class.	Graphic Log	Sample Depth	Borehole Abandonment/ Well Construction Details
	Blows 6"-6 1/2"	BPF								
0.0										
5			4.0 6.0			Silty sand: (0,60,40,0); dark brown (7.5YR 3/2); (5% medium, 45% fine, 50% very fine sand); poorly graded; medium dense; damp.	SM			Backfilled with Hydrated Bentonite Granules
10			9.0 11.0		10.0	Sand: (0,90,10,0); dark brown (7.5YR 3/2); (10% medium, 90% fine to very fine sand); poorly graded; medium dense; damp.	SP			
15			14.0 16.0		15.0	Silt: (0,5,95,0); brown (7.5YR 5/4); non-plastic; stiff; damp.	ML			
20			19.0 21.0			@20' Clayey silt: (0,0,90,10); light brown (7.5YR 6/4); low plasticity; stiff; dry; odorous.				
25			24.0 26.0			Silt: (0,5,90,5); brown; (7.5YR 5/4); low plasticity; stiff; dry.				
30			29.0							

Continued Next Page

SOIL DRILLING LOG

SB/MW#: GP-24
 #D-
 Page 2 of 2
 Sampler: E. Ferguson

DRAFT

PROJECT Mobil Jalk Fee LOCATION 10607 Norwalk Blvd, Santa Fe Springs

Depth Below Surface (ft.)	Penetration Results		Sampler Depth Interval (ft.)	Sample ID #	Hnu Reading (ppm)	Soil Description Color, Texture, Moisture, Etc.	Unified Class.	Graphic Log	Sample Depth	Borehole Abandonment/ Well Construction Details
	Blows 6"-6'-6"	BPF								
			31.0			@30' Sandy silt: (0,15,80,5); brown (10YR 4/3); non-plastic; stiff; dry.				
35			34.0 36.0			@35' Sandy silt: (0,25,70,5); brown (10YR 4/3); non-plastic; stiff; damp.				
40			39.0 41.0		40.0					
					41.0	Sand: (5,95,0,0); dark gray (salt and pepper) (2.5Y 4/1); (25% very coarse to coarse, 50% medium, 25% fine sand); well graded; dense; damp.	SW			
45										
50										
55										
60										
65										

T.D. = 41'

SOIL DRILLING LOG

SB/MW#: **MB-1**
 #D- **15591-93**
 Page **1** of **2**
 Sampler: **T. Overturf**

DRAFT

PROJECT **Mobil Jalk Fee** LOCATION **10607 Norwalk Blvd., Santa Fe Springs**
 ELEVATION _____ MONITORING DEVICE **PID**
 SAMPLING DATE(S) **12-29-95** START **7:15 AM** FINISH **9:00 AM**
 SAMPLING METHOD **CA MOD SPLIT SPOON** SUBCONTRACTOR & EQUIPMENT **BC2 Environmental**
 MEMO **Hand Augered 1st 5 feet.**

Depth Below Surface (ft.)	Penetration Results		Sampler Depth Interval (ft.)	Sample ID #	Hnu Reading (ppm)	Soil Description Color, Texture, Moisture, Etc.	Unified Class.	Graphic Log	Sample Depth	Borehole Abandonment/ Well Construction Details	
	Blows 6"-6'-6"	BPF									
					0.0	Dirt surface.					
5	5-8-16		5.0 6.5	-	25	@5' sandy silt: (0,30,60,10); strong brown (7.5Yr 4/6); (100% medium); dense; damp.					
10	18-22-27		10.0 11.5	-	85						
15	16-22-29		15.0 16.5	-	117	@15' Clayey silt: (0,0,90,10); olive brown (2.5Y 4/4); low plasticity; dense; dry to damp.	ML				
20	15-21-27		20.0 21.5	-	40	@20' Silt: (0,0,100,0); light olive brown (2.5Y 5/4); medium dense; dry.					
25	14-25-30		25.0 26.5	MB-1-25	151	Silt and clay: (0,0,50,50); olive brown (2.5Y 4/3); medium to low plasticity; damp.	ML/ CL				
30					30.0						
						Continued Next Page					

8" Diameter Borehole

Backfilled with Hydrated Bentonite Chips

Norwalk Blvd.

Norwalk Blvd.

Norwalk Blvd.

Norwalk Blvd.

SOIL DRILLING LOG

SB/MW#: **MB-2**
 #D- **15594-96**
 Page **1** of **2**
 Sampler: **T. Overturf**

PROJECT **Mobil Jalk Fee** LOCATION **10607 Norwalk Blvd., Santa Fe Springs**
 ELEVATION _____ MONITORING DEVICE **PID**
 SAMPLING DATE(S) **12-29-95** START **9:15 AM** FINISH **11:00 AM**
 SAMPLING METHOD **CA MOD SPLIT SPOON** SUBCONTRACTOR & EQUIPMENT **BC2 Environmental**
 MEMO **Hand Augered 1st 5 feet.**

Depth Below Surface (ft.)	Penetration Results		Sampler Depth Interval (ft.)	Sample ID #	Hnu Reading (ppm)	Soil Description Color, Texture, Moisture, Etc.	Unified Class.	Graphic Log	Sample Depth	Borehole Abandonment/ Well Construction Details	
	Blows 6"-6"	BPF									
					0.0	Dirt surface.					
5	15-21-30		5.0 6.5	-	27	@5' Silt (0,0,98,2); dark yellowish brown (7.5YR 3/4); non-plastic; medium dense; damp.	ML				8" Diameter Borehole
10	17-20-23		10.0 11.5	-	132	@10' Very dark grayish brown (2.5Y 3/2).					Backfilled with Hydrated Bentonite Chips
15	14-19-24		15.0 16.5	-	1169 996	@15' Strong solvent odor; 1 1/2 thick black layer at 16.0' looks like solvent; 10% clay content.					
20	15-23-25		20.0 21.5	-	140	@20' Silt (0,0,100,0); olive gray (5Y 5/2).					
25	17-22-25		25.0 26.5	MB-2-25	170	@25' Light olive brown (2.5Y 5/3); micaceous.					
30											

Continued Next Page

DRAFT
7 Norwalk Blvd.

SB/MW#: MB-2

#D- 15594-96

Page 2 of 2

Sampler: T. Overturf

PROJECT Mobil Jalk Fee

LOCATION 10607 Norwalk Blvd.. Santa Fe Springs

[illegible]

SOIL DRILLING LOG

SB/MW#: **MACRO**
 #D-
 Page 1 of 3
 Sampler: E. Ferguson

DRAFT

PROJECT Mobil Jalk Fee LOCATION 10607 Norwalk Blvd., Santa Fe Springs
 ELEVATION _____ MONITORING DEVICE QVM Model 580B
 SAMPLING DATE(S) 12-22-95 START _____ FINISH _____
 SAMPLING METHOD _____ SUBCONTRACTOR & EQUIPMENT Vironex - Geoprobe
 MEMO Continuous core.

Depth Below Surface (ft.)	Penetration Results		Sampler Depth Interval (ft.)	Sample ID #	Hnu Reading (ppm)	Soil Description Color, Texture, Moisture, Etc.	Unified Class.	Graphic Log	Sample Depth	Borehole Abandonment/ Well Construction Details
	Blows 6"-6'-6"	BPF								
0.0						Silty sand: (2,58,40,0); dark brown (7.5YR 3/3); (5% coarse, 20% medium, 50% fine, 25% very fine sand); well-graded; medium; dense; dry to damp.	SM			Backfilled with Hydrated Bentonite Granules
4.0						Sandy silt/Silty sand: (0,50,50,0); dark brown (7.5YR 3/2); (5% medium, 45% fine, 50% very fine sand); poorly graded; medium dense; damp; odorous.	SM/ML			
10.0						Sand: (0,90,10,0); dark brown (7.5YR 3/2); (10% medium, 90% fine to very fine sand); poorly graded; medium dense; damp; odorous.	SP			
12.5						Sand: (0,100,0,0); brown (7.5YR 4/3); (60% medium, 20% fine, 20% very fine sand); well graded; medium dense to dense; damp; odorous.	SW			
15										

Continued Next Page

SOIL DRILLING LOG

SB/MW#: **MACRO**
 #D- _____
 Page 2 of 3
 Sampler: E. Ferguson

DRAFT

PROJECT Mobil Jalk Fee LOCATION 10607 Norwalk Blvd., Santa Fe Springs

Depth Below Surface (ft.)	Penetration Results		Sampler Depth Interval (ft.)	Sample ID #	Hnu Reading (ppm)	Soil Description Color, Texture, Moisture, Etc.	Unified Class.	Graphic Log	Sample Depth	Borehole Abandonment/ Well Construction Details
	Blows 6"-5'-6"	BPF								
15.5										
16.0						Silt: (0,5,95,0); brown (7.5YR 5/4); non-plastic; stiff; damp; odorous.	ML			
16.5						Silty sand: (0,70,30,0); dark grayish brown (10YR 4/2); (100% fine to very fine sand); poorly graded; dense; dry; odorous.	SM			
						Sand: (0,95,5,0); brown (7.5YR 4/4); (100% fine to very fine sand); poorly graded; dense; dry. (Silt on the bottom tip approx 1"); odorous.	SP			
20.0						Silty sand: (0,70,30,0); brown (7.5YR 4/4); (100% fine to very fine sand); poorly graded; dense; dry; odorous.	SM			
23.0						Silty sand: (0,70,30,0); brown (7.5YR 4/4); (100% fine to very fine sand); poorly graded; dense; dry; odorous.	ML			
24.0						Clayey silt: (0,0,90,10); light brown (7.5YR 6/4); low plasticity; stiff; dry; odorous.	SM			
29.0						Silty sand: (0,70,30,0); brown (7.5YR 4/4); (100% fine to very fine sand); poorly graded; dense; dry; odorous.	ML			
30.0						Clayey silt: (0,0,90,10); brown (7.5YR 5/4); low plasticity; stiff; dry; odorous.	ML			
						Sandy silt: (0,15,80,5); brown (10YR 4/3); non-plastic; stiff; dry; little recovery; odorous.	ML			

Continued Next Page

SB/MW#: **MACRO**

#D- _____

Page **3** of **3**Sampler: **E. Ferguson****SOIL DRILLING LOG**PROJECT **Mobil Jalk Fee** LOCATION **10607 Norwalk Blvd., Santa Fe Springs**

Depth Below Surface (ft.)	Penetration Results		Sampler Depth Interval (ft.)	Sample ID #	Hnu Reading (ppm)	Soil Description Color, Texture, Moisture, Etc.	Unified Class.	Graphic Log	Sample Depth	Borehole Abandonment/ Well Construction Details
	Blows 6"-6'-6"	BPF								
35						33.0 Sandy silt: (0,28,70,2); brown (10YR 4/3); non-plastic; stiff; damp.	ML			
						34.5 Sandy silt: (0,23,70,7); brown (10YR 4/3); non-plastic; stiff; damp.	ML			
						37.0 Silty sand: (5,75,20,0); dark grayish brown (2.5Y 4/2); (25% coarse to very coarse, 50% medium, 25% fine sand); well graded; dense; damp.	SM			
40						39.0 Sand: (5,95,0,0); dark gray (2.5Y 4/1); (salt and pepper); (25% very coarse to coarse, 50% medium, 25% fine sand); well graded; dense; damp.	SW			
						42.0				
45										
50										

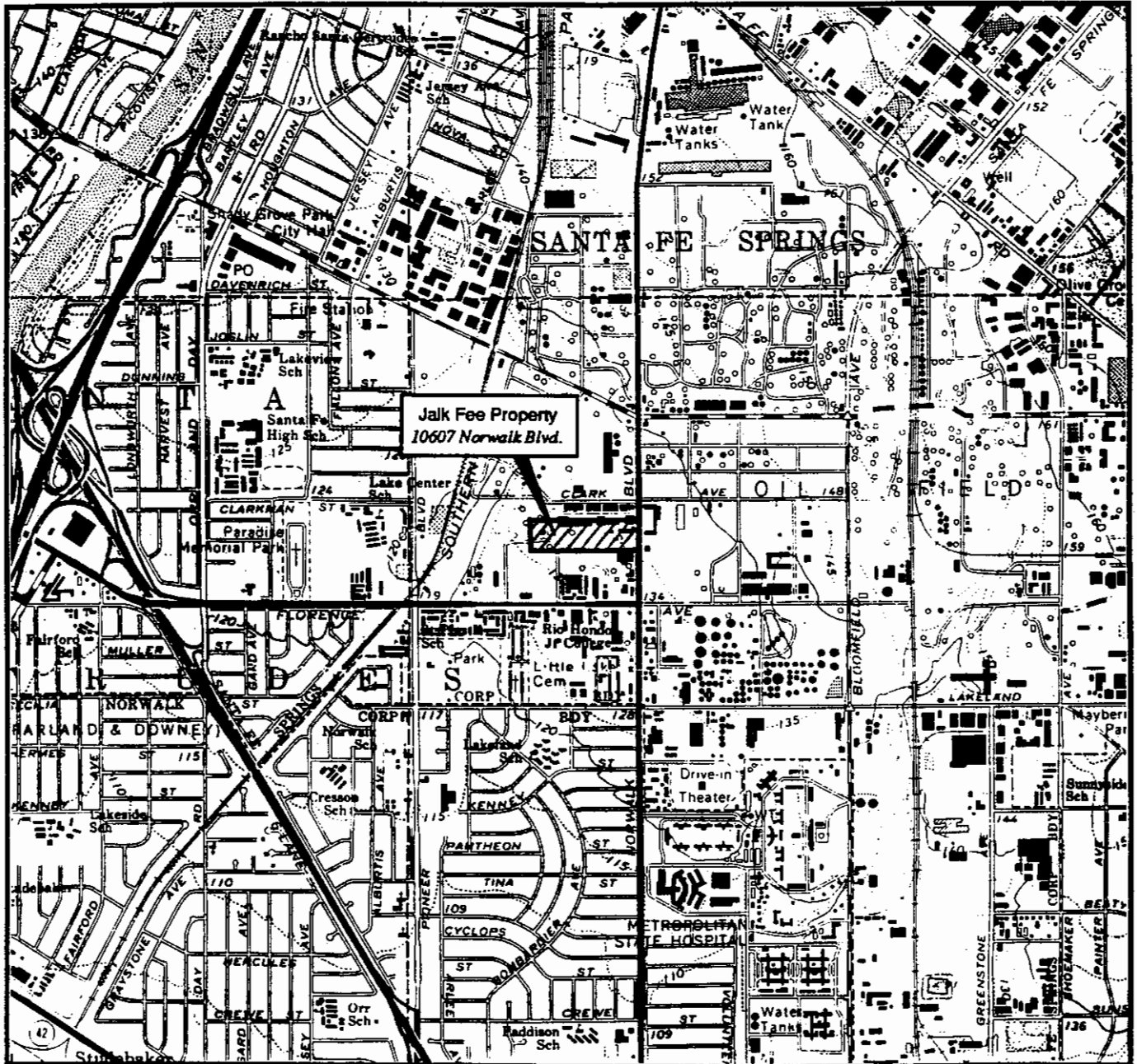
T.D. = 42'

Appendix D

Chain-of-Custody and Laboratory Data Sheets

DRAFT

FIGURE 1
SITE LOCATION MAP
JALK FEE PROPERTY
SANTA FE SPRINGS, CALIFORNIA



SOURCE: FROM THE USGS MAP. WHITTIER QUADRANGLE, CA.
7.5 MINUTE SERIES (TOPOGRAPHIC MAP) - 1965, PHOTO REVISED 1981

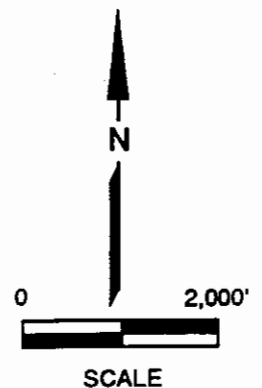
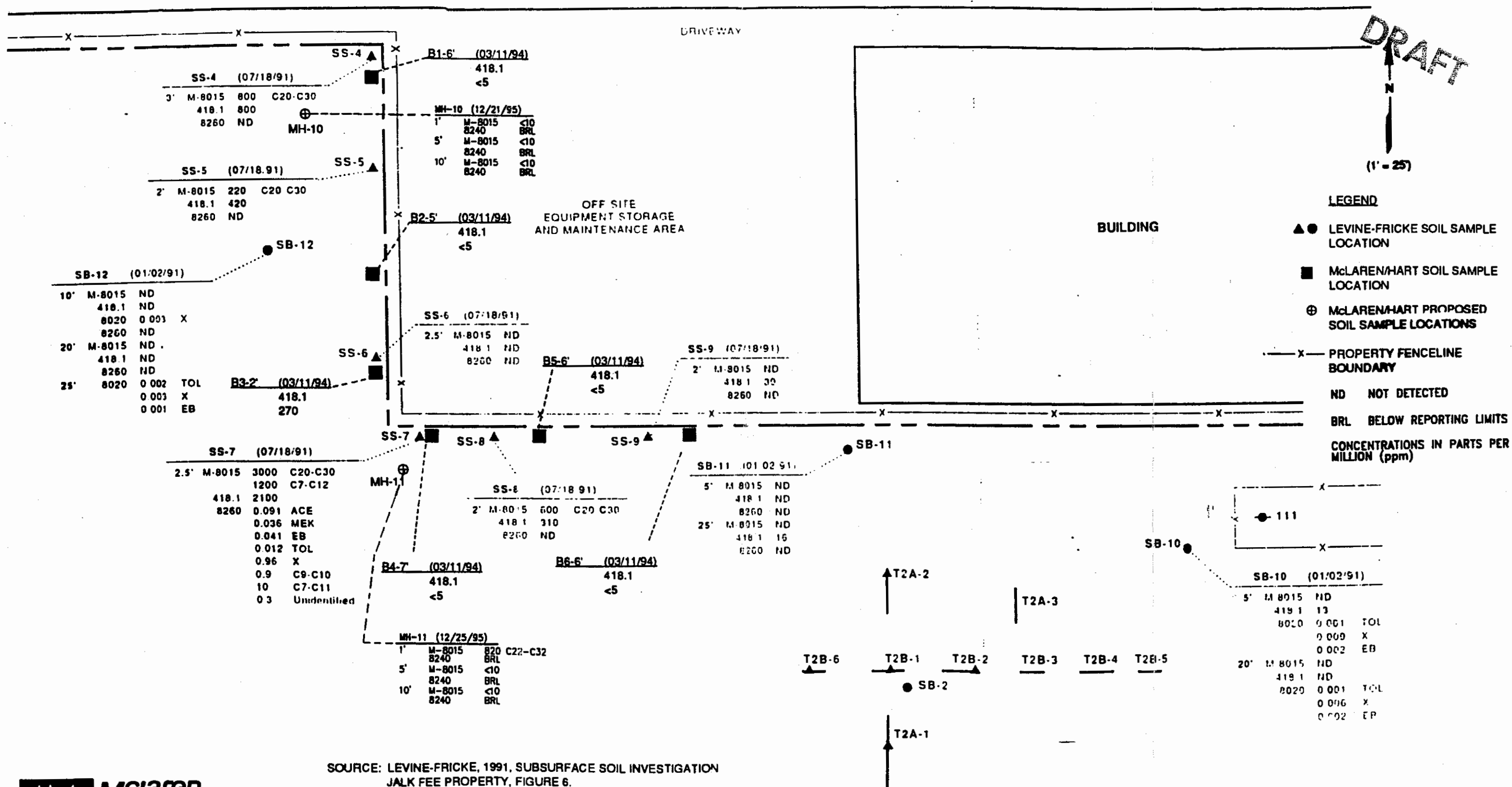
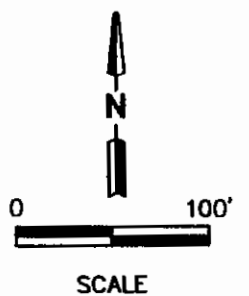
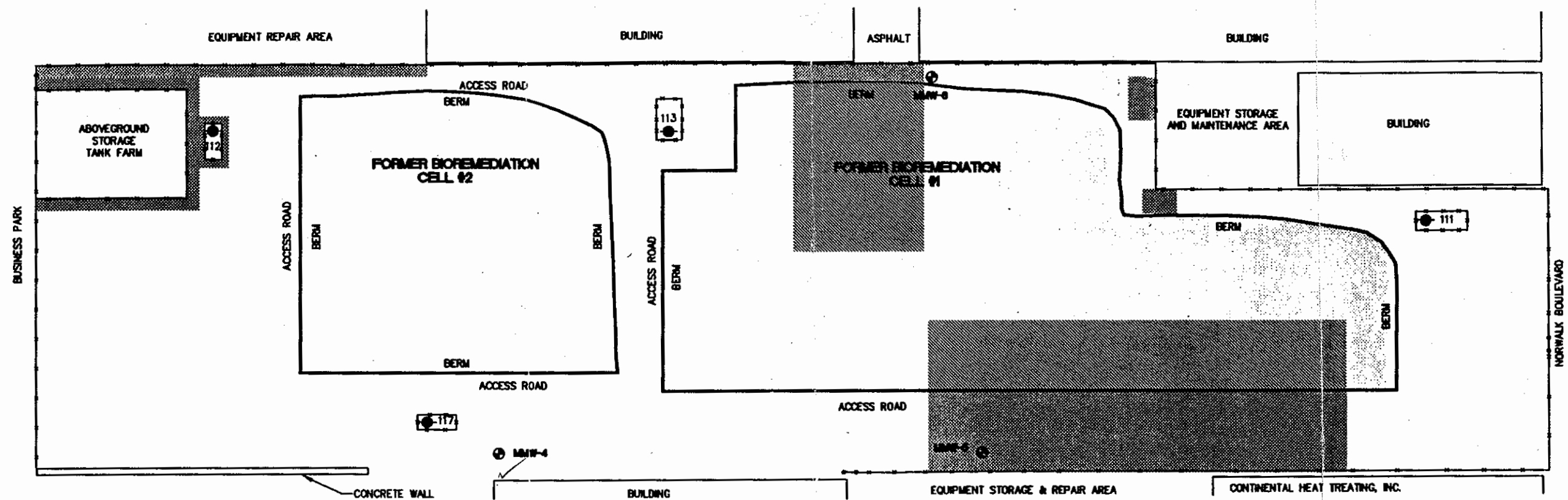


FIGURE 6
SOIL SAMPLE ANALYTICAL RESULTS
JALK FEE SITE
NORTHEAST PERIMETER
10607 NORWALK BLVD.
SANTA FE SPRINGS, CALIFORNIA





LEGEND			
	APPROXIMATE AREA OF BIOREMEDIATION CELL (4.37 ACRES)		AREA OF TASK 1
	GROUNDWATER MONITOR WELL LOCATION		AREA OF TASK 2
NOTES:	SITE MAP MODIFIED FROM LEVINE-FRICKE (1991c).		AREA OF TASK 3
	OPERATIONAL OIL WELL		AREA OF TASK 2 & 3
	CHAIN LINK FENCE		
	GATE		

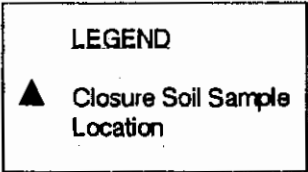


16755 VON KARMAN AVENUE, IRVINE, CA 92714
TEL (714) 756-2867 FAX (714) 756-8480

FIGURE 2
MOBIL JALK FEE SITE MAP
10607 NORWALK BOULEVARD
SANTA FE SPRINGS,
CALIFORNIA

DRAWN BY: E. Muresan	DATE: 10-5-94	PROJECT NAME: MOBIL
CHECKED BY: E. Ferguson	DATE: 02/2/96	PROJECT NUMBER: 03.001382.000
APPROVED BY: T. Bubier	DATE: 02/2/96	REVISION DATE: 02/1/96 vb
		DRAWING FILE # 1195_F1

T9404036*



DRAFT

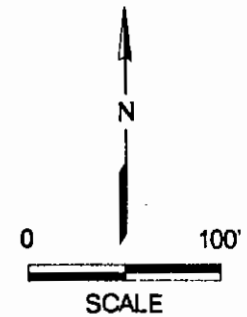
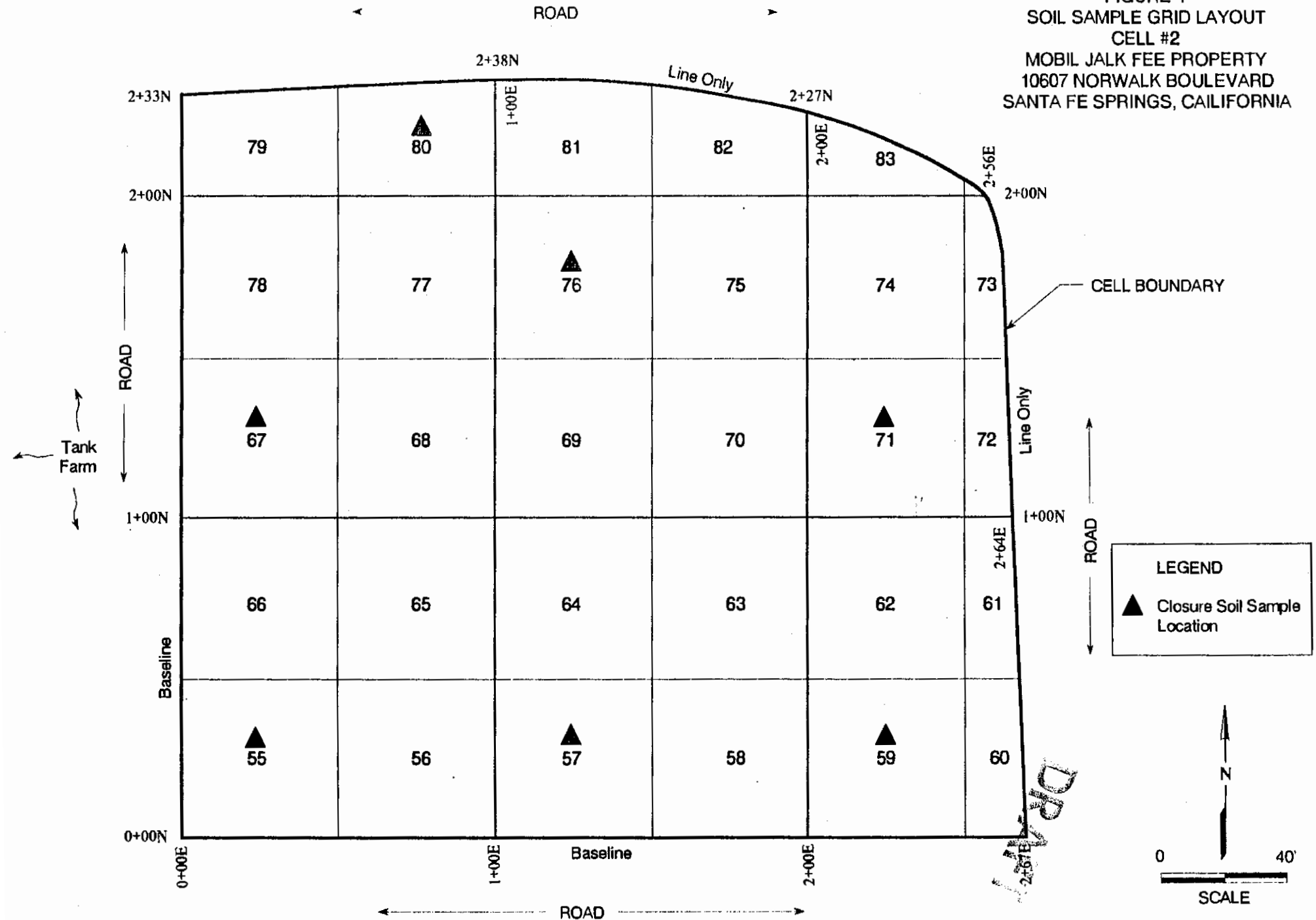
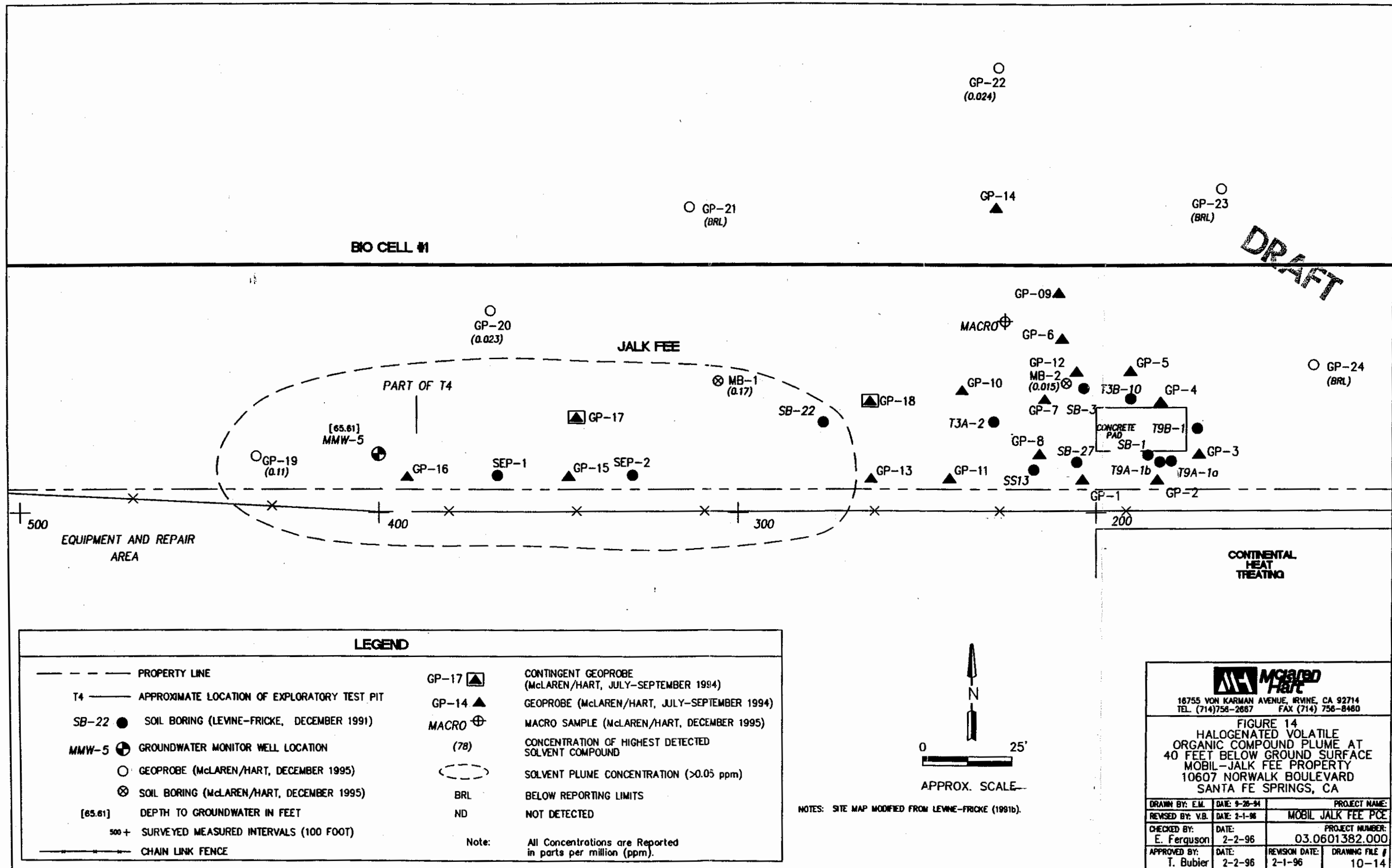
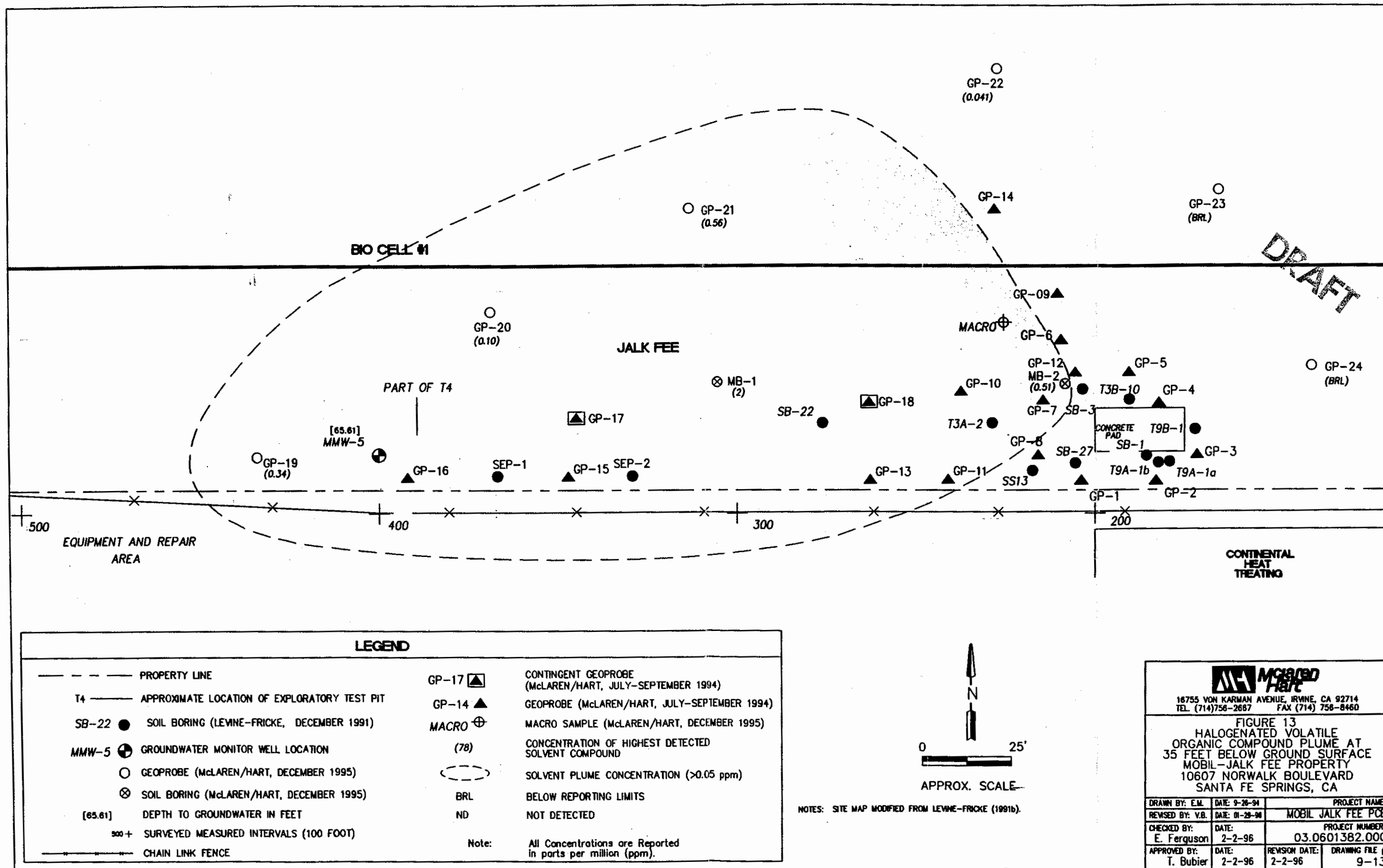
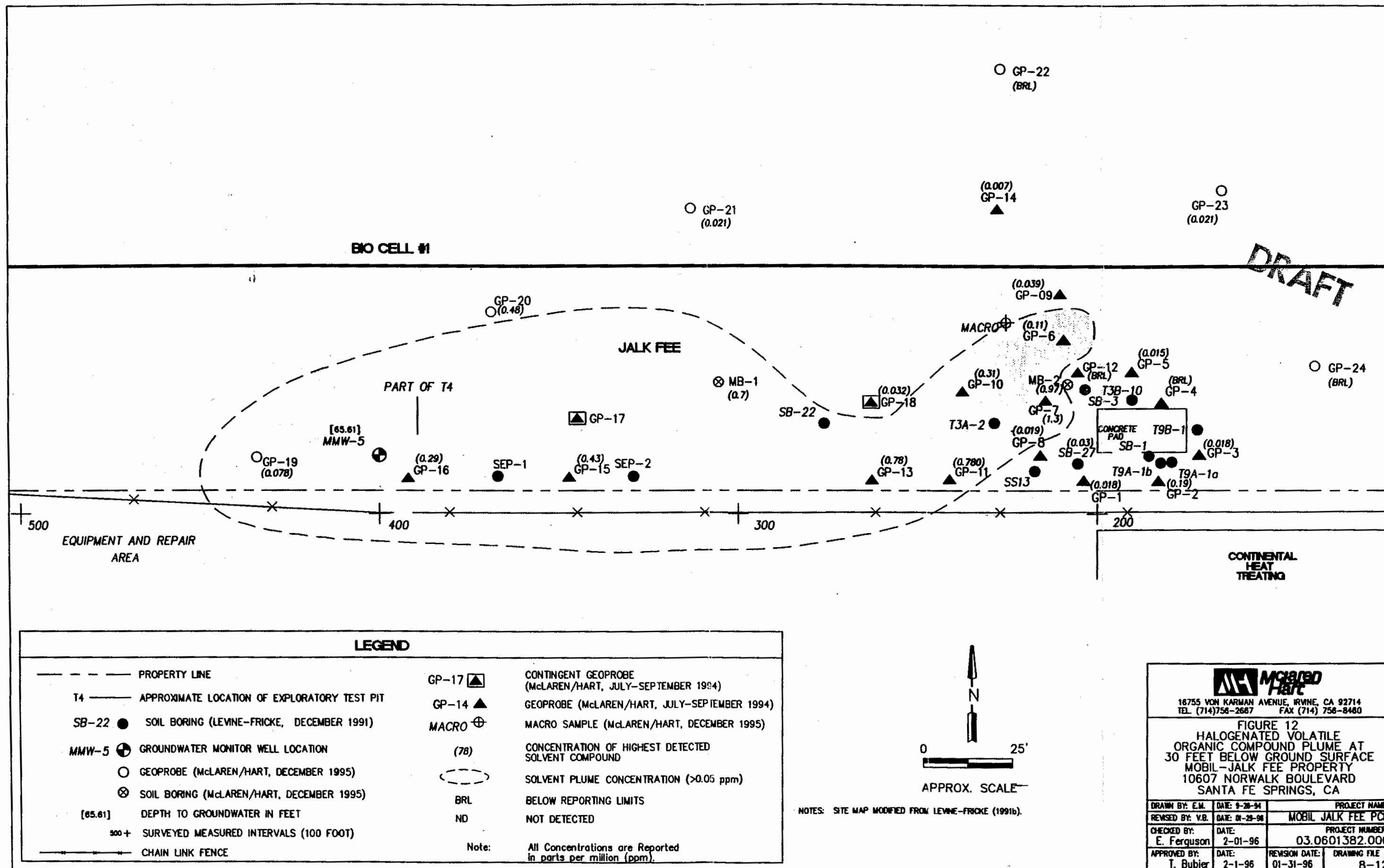


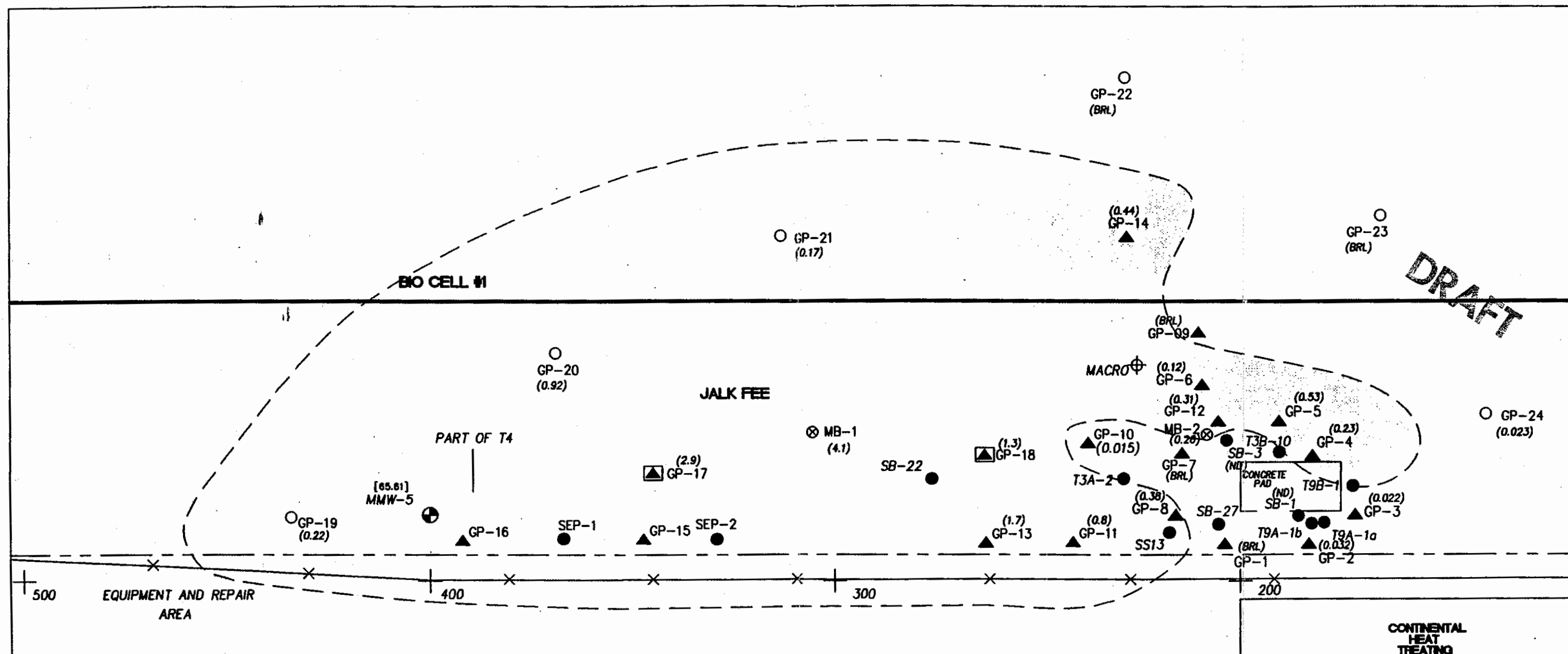
FIGURE 4
SOIL SAMPLE GRID LAYOUT
CELL #2
MOBIL JALK FEE PROPERTY
10607 NORWALK BOULEVARD
SANTA FE SPRINGS, CALIFORNIA





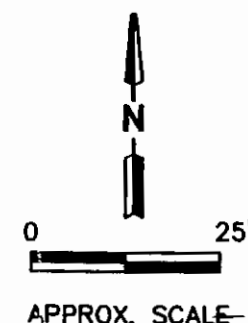






LEGEND

---	PROPERTY LINE	GP-17 ▲	CONTINGENT GEOPROBE (McLAREN/HART, JULY-SEPTEMBER 1994)
T4 —	APPROXIMATE LOCATION OF EXPLORATORY TEST PIT	GP-14 ▲	GEOPROBE (McLAREN/HART, JULY-SEPTEMBER 1994)
SB-22 ●	SOIL BORING (LEVINE-FRICKE, DECEMBER 1991)	MACRO ⊕	MACRO SAMPLE (McLAREN/HART, DECEMBER 1995)
MMW-5 ⊕	GROUNDWATER MONITOR WELL LOCATION	(78)	CONCENTRATION OF HIGHEST DETECTED SOLVENT COMPOUND
○	GEOPROBE (McLAREN/HART, DECEMBER 1995)	(78)	SOLVENT PLUME CONCENTRATION (>0.05 ppm)
⊗	SOIL BORING (McLAREN/HART, DECEMBER 1995)	BRL	BELOW REPORTING LIMITS
[65.61]	DEPTH TO GROUNDWATER IN FEET	ND	NOT DETECTED
500+	SURVEYED MEASURED INTERVALS (100 FOOT)	Note:	All Concentrations are Reported in parts per million (ppm).
---	CHAIN LINK FENCE		



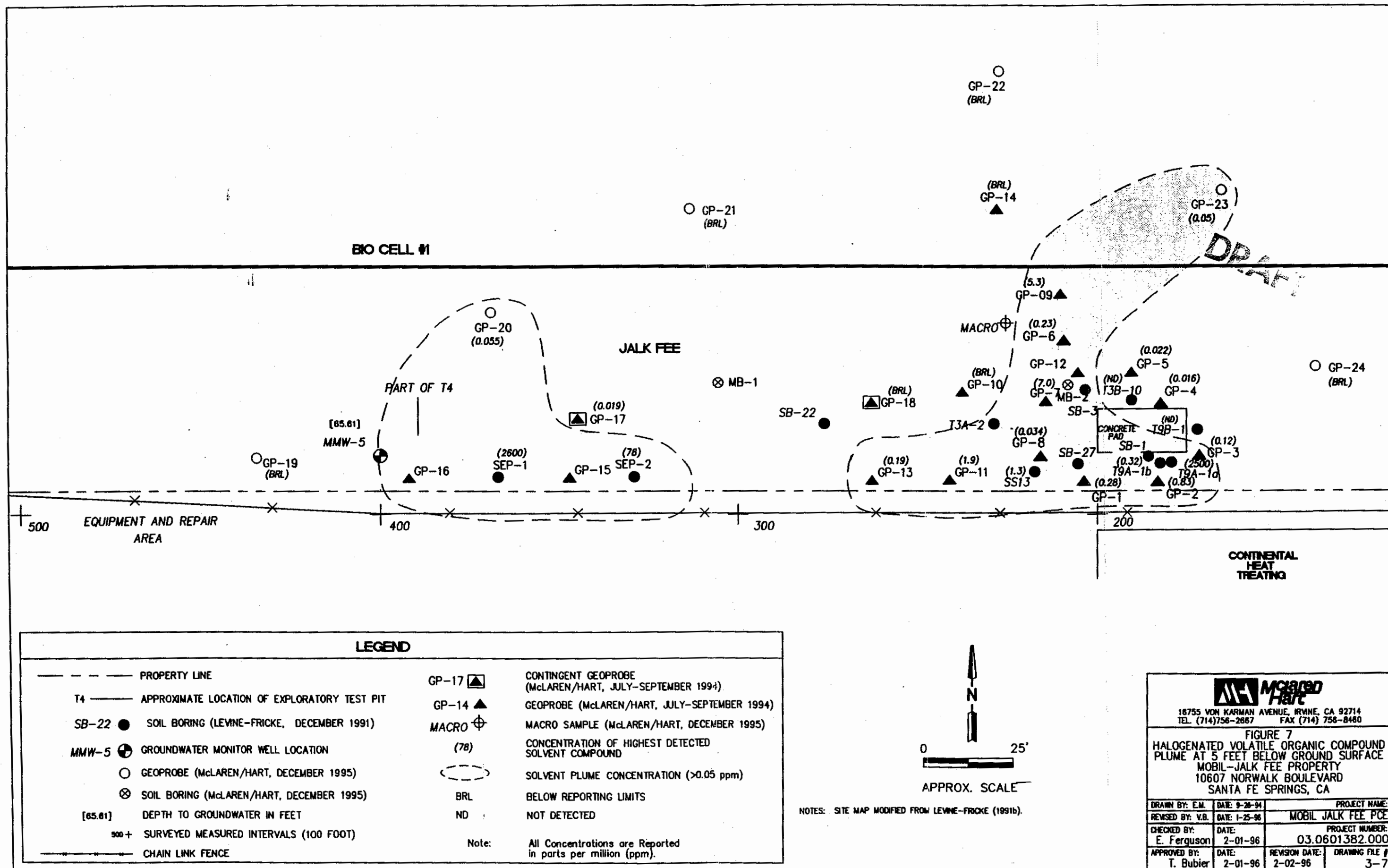
NOTES: SITE MAP MODIFIED FROM LEVINE-FRICKE (1991b).

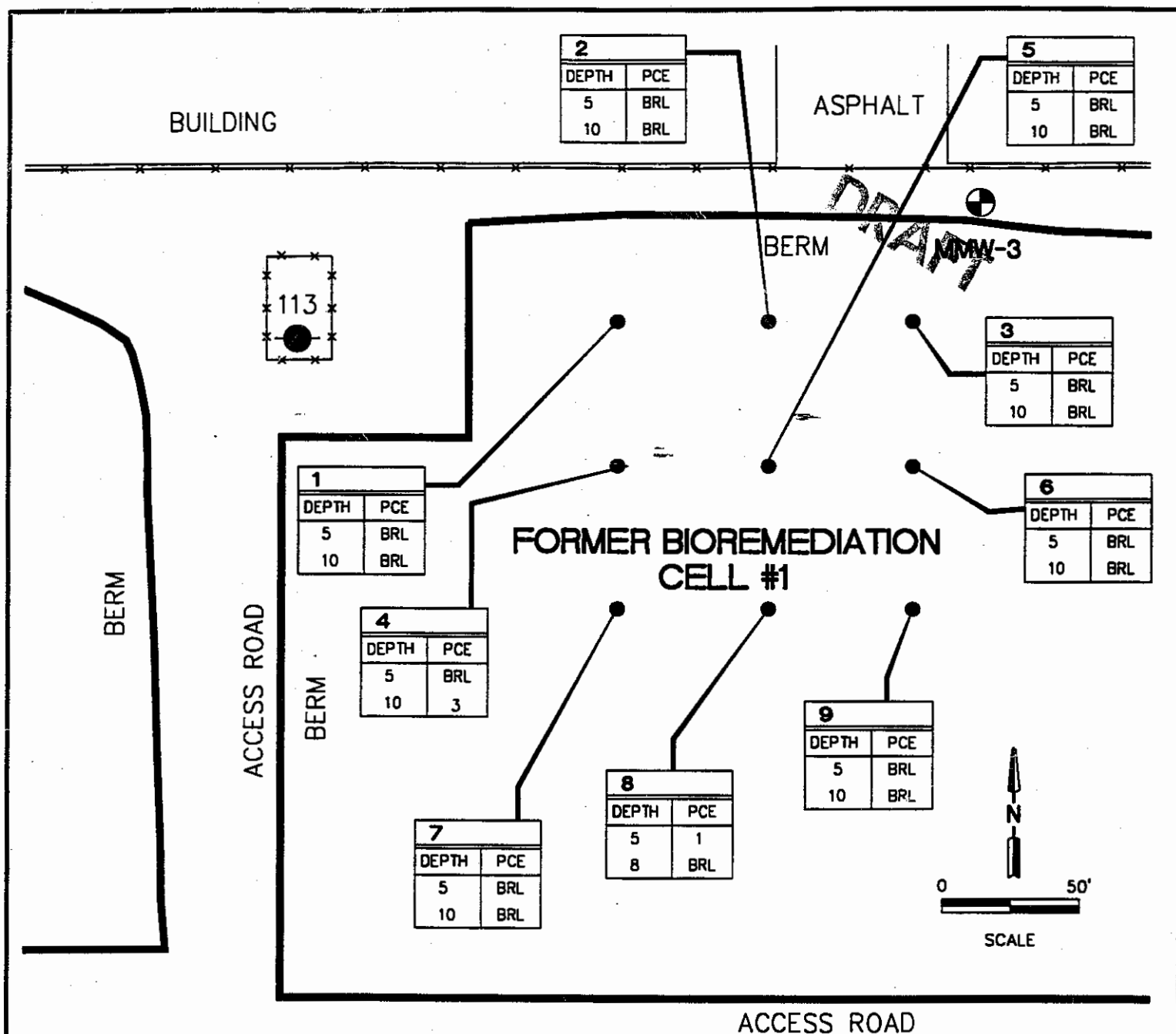


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FIGURE 11
HALOGENATED VOLATILE
ORGANIC COMPOUND PLUME AT
25 FEET BELOW GROUND SURFACE
MOBIL-JALK FEE PROPERTY
10607 NORWALK BOULEVARD
SANTA FE SPRINGS, CA

DRAWN BY: E.M.	DATE: 9-26-94	PROJECT NAME:
REVISED BY: V.B.	DATE: 2-1-96	MOBIL JALK FEE PCE
CHECKED BY: E. Ferguson	DATE: 2-2-96	PROJECT NUMBER: 03.0601382.000
APPROVED BY: T. Bubier	DATE: 2-2-96	REVISION DATE: 2-2-96
		DRAWING FILE # 7-11





LEGEND

NOTES: SITE MAP MODIFIED FROM LEVINE-FRICKE (1991c).

●-113

OPERATIONAL OIL WELL

— — — — —

CHAIN LINK FENCE

●

SOIL GAS SAMPLE LOCATION

(ppb)

CONCENTRATIONS IN PARTS PER BILLION



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FIGURE 15
SOIL GAS SURVEY RESULTS
FORMER TRUCKING OPERATING AREA
MOBIL-JALK FEE PROPERTY
10307 NORWALK BLVD.
SANTA FE SPRINGS, CALIFORNIA

DRAWN BY: E. Mureson	DATE: 10-5-94	PROJECT NAME: MOBIL
CHECKED BY: E. Ferguson	DATE: 02/01/96	PROJECT NUMBER: 03.001382.000
APPROVED BY: T. Bubier	DATE: 02/01/96	REVISION DATE: 01/31/96 vlb
		DRAWING FILE # 15